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AUTHOR	Engstrom, Gerald A.
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ABSTRACT

Classroom climate has been found to predict a significant portion of the variance in student achievement, independent of student background and intelligence quotient scores. This study sought to more clearly define classroom climate by determining to what extent climate measures teacher characteristics, student characteristics, and classroom characteristics such as curriculum and class size. After delineating the domains measured by classroom climate and establishing a climate construct, concrete and manipulable variables that covaried with the climate scale were identified. Data were obtained from 895 junior and senior high school classes. Students and teachers responded to questionnaires and interviews, and each class was observed on three separate occasions. Attention focused upon classroom climate variables of: (1) teacher concern, punitiveness, authoritarianism, favoritism, enthusiasm, and clarity; (2) student decision-making, peer attitudes, competitiveness, cliqueness, satisfaction, compliance, and apathy; (3) classroom physical appearance; and (4) instructional practices: knowledge of results, task difficulty, and organization. Evidence from the study indicated that the climate construct is affected by a wide range of variables that merge together in the classroom context, and the construct is most affected by the variables most proximate to the classroom. Two major findings support this evidence. First, climate scores are sensitive to variation from several domains. The background and beliefs of the students and teachers and the conditions within the classroom all affect the climate of the class. However, these variables accounted for, at most, 18 percent of the variance in the climate scores and were not considered a threat to the construct's validity. Second, teacher perceptions of classroom occurrences were closely related to the climate scores. Five appendices provide additional information. (JD)

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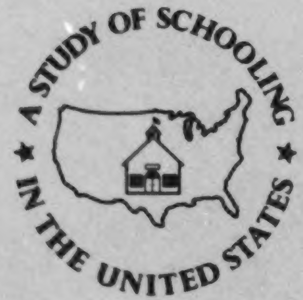
A STUDY OF SCHOOLING

Technical Report Series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AN EXAMINATION OF THE VIABILITY OF CLASS CLIMATE AS A USEFUL CONSTRUCT IN SECONDARY SCHOOLS *

Gerald A. Engstrom

Technical Report No. 23

1981

A Study of Schooling is based upon the assumption that improving schools requires knowing what is happening in and around them. A comprehensive data-base of contextual information was obtained from students, teachers, administrators, parents and observers at all grade levels in thirty-eight elementary and secondary purposively sampled schools. *It is strongly recommended that readers of any technical report in this series first read Technical Report No. 1 which outlines the details, scope and limitations of the Study as a whole.*

It must be understood that this series of technical reports does not constitute the Study. Some reports are highly specific "molecular" inquiries while others take a more "molar" view across data sources, schooling levels, etc. Some reports are more methodological in nature arising out of issues in data analysis. Many of the reports quite naturally overlap in data analysed and interpretations rendered. Some authors have approached their task as consisting mostly of data description with little discussion beyond the presentation of the data. Others have ventured further into the realm of interpretation and speculation. *It must be further understood that data-based inferences can and do differ among researchers who come at the data from differing points-of-view.* Authors, therefore, are duly acknowledged for each report and are responsible for the material presented therein.

*This report was also supported by National Institute of Education Grant #G-79-0100

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AN EXAMINATION OF THE VIABILITY OF CLASS CLIMATE AS A USEFUL CONSTRUCT IN SECONDARY SCHOOLS

The emergence of educational processes and settings as important foci of study has stimulated the development of new methods of educational measurement which attempt to measure the effect of processes and settings. Of these, the so-called climate or environmental measures seem to be the most common. Numerous studies have been completed using climate measures and the number appears to be increasing. The Massachusetts Department of Education, for example, recently completed a climate study using a statewide sample of the public schools and it has subsequently circulated a handbook to all of the Massachusetts public schools giving instructions on how to conduct climate studies in each school with the intent of "studying and improving the learning climate." (Massachusetts Department of Education, n.d.)

But, in spite of the popularity of measures of climate for both research and program evaluation, the actual parameters and meanings of the construct remain vague and ill-defined. The construct is measured through the use of survey-type instruments employing numerous scales of relatively high inference items. The respondents are participants in various processes and settings. While used in a variety of settings, the most frequently examined is the classroom. Since this is so, this study will focus primarily on class climate. But, even though the predictive validity of class climate measures is by now well established--they consistently account for variance in cognitive achievement beyond that accounted for by precourse achievement tests or by IQ (Walberg, 1974)--the perceptual and highly inferential nature of climate instruments make it difficult to determine exactly what accounts for this increase in shared variance.

This difficulty arises in part from differing conceptualizations of what climate measures. The domain that climate measures is thought by some reseachers to be the characteristics of those responding to the questionnaire (i.e., students), others feel that climate measures the results of actions and characteristics of those in the leadership positions in a setting (i.e., teachers), and others feel that it measures characteristics of the setting independent of the characteristics of the leadership or respondents.

This conceptual confusion creates a clear problem for one who is both interested in improving schooling and is impressed and encouraged by the predictive validity of class climate measures. A dilemma exists. Although climate helps explain achievement--and manipulating the climate should, therefore, change achievement--there is no consensus as to what variables should be changed to manipulate the climate. Even though specific scales of the instruments can be pointed to as the critical ones, the scales themselves are defined abstractly and do not translate directly into observable behavior. Therefore, it seems essential at this stage, when climate instruments are already being used as a tool for evaluation and attempted change, that the climate construct be more clearly delineated. Thus, it is the purpose of this study first to more clearly define the parameters of class climate by seeking to determine to what extent climate measures characteristics of the setting alone, of the leader in the setting, and of the respondents to the questionnaire; and secondly, to compare class climate to other views of the classroom in an attempt to discover concrete and manipulable co-variates to class climate.

The potential significance of this study is clear. Student background and IQ are the most powerful predictors of student achievement and little can be done to manipulate them. Class climate, in contrast, has been found to *predict a significant portion of the variance in achievement independent of student background and IQ, and class climate is potentially manipulable.* If this study were successful in more clearly delineating the domain measured by class climate and in specifying concrete co-variates with climate, class climate would become a more precise and potentially useful instrument for both the researcher and the agents of school change.

Finally, mention should be made of the applicability of the findings of this study. After reviewing research on class climate, Randhawa and Fu (1973) point out that "the locus of interest in educational measurement is beginning to shift from measures of the individual to measures of the environment." This shift can be traced at least as far back as Bloom's (1964) appeal for environmental-process research in education, and the trend appears to be accelerating. For example, Walberg (1974) reports having received about 400 requests from investigators for copies of the climate instrument he developed. And~~,~~ the use of climate measures for statewide evaluation in Massachusetts has already been referred to.

The rise in the popularity of class climate measures has been hastened, as Walberg (1974) points out, by the inability of traditional outcome measures to show significant differences in educational programs that are felt to be quite different, and in recognition of the fact that student aptitude--which is the focus of most measurement and the source of the largest amount of variance--cannot be manipulated, while the environment--which is also an important source of variance--can be manipulated.

This recognition of the limitations of traditional outcome measures has fostered a search for tools of evaluation that measure different and broader domains. Already, climate measures are being used as one of these tools. However, unless the climate construct and the domain it measures are more clearly delineated so we have a clearer understanding of what is being measured, the usefulness of the instrument will be questionable. And in spite of the potential malleability of the environment, the climate literature to date has not offered a very clear guide to which aspects of the environment would be the most promising and productive candidates for manipulation.

One reason for this lack of guidance is the conceptual confusion surrounding the construct of climate. While the conceptual confusion is discussed more fully in the literature on organizational climate, the issue is the same. The issue is to what degree climate represents individual attributes, or characteristics of the setting. As a demonstration of how loosely the term is used, Howe and Gavin (1974) constructed a continuum of climate studies which ranged from studies which conceptualized climate as being a measure of organizational attributes to studies which conceptualized climate to be a measure of individual attributes only. They found studies representing the full range of this continuum.

Although they were not considering this issue of conceptual ambiguity, Walberg and his associates conducted a number of studies that are relevant. Their studies were designed to validate the Getzels-Thelan theory of the classroom as a social system and they demonstrated that climate can be predicted from teacher personality (Walberg, 1968), from pupil characteristics (Walberg, 1969; Walberg and Ahlgren, 1970), and from classroom characteristics such as curriculum (Anderson, Walberg and Welch, 1969) and class size (Walberg, 1969a). Even though these studies were not designed to predict the amount of climate variance accounted for by these various predictors, the question arises as to whether or not climate is an independent construct or merely an alternate measure of teacher personality, pupil characteristics, or of a combination of these.

Further lack of conceptual unity is demonstrated by the variety of scales used in different climate instruments. There are some wide divergences in scale names and in the number of scales used. But, such divergence is not surprising since the environment, which climate purportedly measures, is broad, vague, and multidimensional. Because of this, Jones and James (1974) have called climate a catch-all phrase and suggest that almost any study focusing on organizational or group characteristics could be considered a climate study. Without a clearer consensus as to what climate actually measures, it would be difficult for the change agent to know which of the complex of educational variables need changing to improve the climate.

To be sure, influencing climate is a valid goal since studies attempting to determine the predictability of learning outcomes through the use of climate measures have demonstrated that, when taken alone, climate scales can better predict learning outcomes than student IQ (Anderson and Walberg, 1968a; Walberg and Anderson, 1972; Walberg, 1971).

But what remains to be done is, first, to determine to what extent climate measures individual attributes and to what extent it measures characteristics of the setting and, then, to attempt to bridge the gap between the high inference, perceptual climate scales and the more tangible variables the change agent would be looking to change. As encouraging as it is that perceptual measures of the climate are able to account for learning outcomes, the change agent will not be able to manipulate the climate if the meaning of the climate scales is locked in the heads of the perceivers.

Data Base

The Study of Schooling, from which data for this study will be taken, is a comprehensive descriptive study of the context of schooling in 38 schools--schools carefully chosen on such factors as school size, economic level, racial/ethnic mix of students, and location (urban, suburban, and rural). Data for the study were collected at these schools during Spring and Fall of 1977. Data were collected from approximately 20,000 students, 10,000 parents, 1,400 teachers, 50 school administrators and 150 school board members. Observation data were collected in over 1,000 classrooms. Eight subject areas were sampled: mathematics, English/language arts, natural sciences, social sciences, career education, the arts, foreign language, and physical education.

Not only are the number of cases in the sample large; but also the amount of data collected for each case is large. Two classes at each grade level (excluding kindergarten) were sampled at each elementary school. At each secondary school, a representative and random sampling of course offerings was taken, averaging over 40 classes at each high school and over 30 classes at each junior high school. Generally, the size of each sample is large enough to warrant investigation of the data for patterns, trends, and relationships. And, all sampled classes were observed on three separate occasions--entire days for elementary classes and entire periods for secondary classes. All students present in the sampled classes were administered questionnaires. Questionnaires were given also to all teachers at the school, and teachers of the sampled classes were interviewed.

Of these data, the proposed study will focus on that obtained from junior and senior high school students, teachers and observed classes. The sample for each of these categories is as follows:

	All	High	Junior/ Middle
Students	N=20157	N=11051	N= 9106
Teachers	N= 1064	N= 664	N= 400
Classes	N= 895	N= 526	N= 395

(The number of students listed represents the questionnaires received, not the number of unique individuals, since some students were sampled in more than one class.)

The availability of class data by subject matter is as follows:

SAMPLED CLASSES BY SUBJECT

	Senior High Schools	Junior High/ Middle Schools	Total Secondary	Per Cent
English	83	73	156	17.4
Math	72	70	142	15.9
Social Studies	76	54	130	14.5
Science	65	42	107	12.0
Arts	65	45	110	12.3
Foreign Language	27	11	38	4.2
Vocational/ Career Education	105	49	154	17.2
Physical Education	33	25	58	6.5
Totals	526	369	895	100

Instrumentation

A thorough review of existing measurement devices made it clear that the Study of Schooling would have to develop new and more comprehensive instrumentation. Between February 1974 and August 1975, questionnaires and interview schedules were constructed for students, teachers, school and district administrators, other adult school staff, parents, and other community members. The Stanford Research Institute's Observation System (Stallings, 1975) was considerably modified for use in observing both elementary and secondary classrooms. Survey questions were formulated and constructs operationally defined by the generation of scalable items. The development of all measurement techniques included repeated field testing, analysis, and revision. (Further details can be found in Sirotnik, Nides, Engstrom, 1980)

The entire instrument package was pilot tested during a six-week period at a triple (e.g. an elementary, junior and senior high from the same school district) in Riverside, California. As a result of the pilot experience, significant modification, refinement and integration of data collection procedures and instrumentation were achieved. The Stanford Research Institute's classroom observation instrument was modified so as to (a) sort out data by "classroom context" (instructional, behavioral, routines, or social). The entire data collection time per triple was reduced to 20 days, and most major instrumentation was converted to optical scanning for efficient and accurate computerization.

The instrument of most importance to this study is the class climate instrument (from Part 3 of the Secondary Student instrument). The instrument contains 113 items and 29 a priori dimensions. The items are similar in type to those found in most instruments, although they had to be substantially reworded to make the reading level appropriate for junior high as well as high school students. The instrument also differs from other class climate measures in its attempt to measure a range of instructional practices. These include the a priori dimensions of Appropriate Practice, Time, Goals and Objectives, Knowledge of Results, Perceived Purpose, etc. Analyses of the instrument undertaken since the data collection have suggested a final form of the instrument consisting of 100 items and 18 dimensions. This form of the instrument will be used in this study.*

Internal consistencies (as measured by alpha coefficients) have been computed for this instrument with the following results for the several larger and major scales: Peer Esteem, .77; Teacher Concern, .85; and Teacher Punitiveness, .74.

Convergent Validity

The first of the objectives of the study to be given attention was the fairly straightforward question of the extent of congruence between the class climate scales and the other student survey items intended to tap somewhat the same domain. This examination of congruence can be considered a test of convergent validity.

While there are not many items outside of the climate scales which attempt to describe characteristics of specific classes, those that exist are found in part two of the student survey. Of the eleven items, those that appear to be most related to the constructs being measured by the climate scales are the following:

---

*See Appendix A for a copy of the class climate dimensions.

1. How interesting or boring for you is what you are learning in this class?
   (1=very boring, 4=very interesting).

2. How hard or easy for you is what you are learning in this class?
   (1=too easy, 5=too hard).

3. How often can you choose your own books, materials, or equipment in this class?
   (1=never, 3=whenever I want to).

4. In this class, how much time is usually taken by daily routines (passing out materials, taking attendance, making announcements).
   (1=least, 3=most).

5. In this class, how much time is usually taken by learning?
   (1=least, 3=most).

6. In this class, how much time is usually taken by getting students to behave?
   (1=least, 3=most).

While these items were not intended to duplicate the climate scales, they clearly focus on the same general domain and should relate in consistent ways with those scales.

Procedure

After selecting these items, the next step was to compare student responses on the six items to student responses on the 18 climate scales. The relationship between these two sets of variables were examined through the use of correlation matrices. Matrices (Pearson r) were computed for the total sample, for the junior high and high schools separately (to examine level differences), and for each of eight subjects at the junior high and high schools separately (to examine subject area differences).

Results

All in all, the results of the computed correlations demonstrate that the six items related to the climate scales in interesting and understandable ways. The matrix for the total sample is reported in Table 1. And, as this Table illustrates, item number 1, for which a high score indicates that the students find their class very interesting, has its highest intercorrelations with the climate scales Student Satisfaction (r=.83), Instructional Practices: Organization (r=.74) and Teacher Clarity (r=.73). The highest negative correlation is between items 1 and the Student Apathy scale (r= -.59). These are high intercorrelations and they are logical. One would expect students who find their classes interesting to also be satified and to consider their classes organized and their teacher understandable.

It is also to be expected that item 2, for which a high score means the students consider that what they are learning is too hard, would be most highly related to the scale Task Difficulty (r=.45). It is, however, a little surprising that this item has its strongest negative correlation with the Student Decision-Making scale. In fact, for the junior high school students item 2 has its strongest relationship with this scale. It appears that the more students are free to choose what they do in their classes the easier they find them, or the opposite.

The third item, for which a high score indicates that the students feel they can frequently choose their own books, materials or equipment, is strongly related to only one scale - the Student Decision-Making scale (r=.68), not surprisingly.

The final three items are related--all dealing with what occupies the classroom time. The first of these, daily routines, does not have high intercorrelations with any of the climate scales. This is largely due to the fact that it does not correspond very closely to any of the

TABLE I

Intercorrelations Between 6 Items From Part 2 And Class Climate Scales Over All Schools[*]

	Climate Dimensions																	
Separate class level items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	70	-31	-54	-41	62	33	47	-27	14	-25	73	83	50	-59	55	67	-52	74
2	-08	02	05	09	03	13	-37	-20	09	-11	-28	-21	-04	-20	-06	-03	45	-03
3	32	-15	-26	15	25	14	68	-03	-07	-01	35	40	08	-09	28	28	-31	25
4	12	-10	-12	-09	14	13	14	-24	-03	-15	11	13	07	-18	17	07	-16	13
5	46	-44	-48	-23	51	35	-06	-59	-05	-23	35	33	40	-65	24	38	-21	51
6	-49	46	51	30	-52	-37	-08	67	09	32	-38	-38	-38	68	-31	-38	29	-53

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[*] Decimal points have been omitted

dimensions. The students, apparently do not feel that the amount of time spent on daily routines has much relationship to dimensions measured by the climate instrument.

The same is not true of the final two items which also deal with the use of class time--that used for learning, and for getting students to behave. These two items are mirror images of one another. The amount of time spent on learning is positively related to Teacher Enthusiasm (r=.51) and Instructional Practices: Organizations (r=.51) and negatively related to Student Apathy (r= -.65) and Classroom Dissonance (r= -.59). The amount of time spent on getting students to behave relates to the same scales in the opposite direction: Teacher Enthusiasm (r= -.52), Instructional Practices: Organization (r= -.53), Student Apathy (r=.68) and Classroom Dissonance (r=.67).

The same overall pattern of relationships obtains between the six items and the climate scales when examined for junior high and high schools and for the separate subject areas. Therefore, it will be unecessary to discuss the results broken down any further. While it is not necessary for purposes of testing convergent validity, further examination might suggest interesting substantive differences between climate and the subject areas. To cite only one of the more obvious examples, item 2 (for which a high score means that the class is perceived as hard) is positively related (at the high school level) to Instructional Practices: Knowledge of Results for the arts classes (r=.46) and the P.E. classes (r=.47), but is negatively related for the foreign language classes (r= -.49). A moments reflection on the nature of these three classes gives meaning to this apparent inconsistency. Art and P.E. classes are difficult when a standard of performance is established and the students are given knowledge about how well they meet the standard, whereas foreign language classes might be considered easier if what is expected is clear and if one has accurate feedback as to one's performance. Having "knowledge of results" does not have the same effect for the two types of classes.

Discussion

While the single items from Part 2 of the student survey were not intended to measure exactly the same domain as the climate scales, it was expected that there would be consistent and understandable relationships between them. The results of the computed intercorrelations between the two groups of variables offer considerable evidence that this expectation has been met. Examining these interrelationships not only helps establish the validity of the scales, but also offers additional understanding as to what this sample of students mean when they respond that classes are interesting, difficult, etc.

Student Background Variables

Another question of interest concerning class climate is the degree to which students agree on their perceptions of the climate. One way of examining this question would be to aggregate individuals within the class according to certain critical characteristics and to compare the aggregated groups. Among the variables generally considered to be the most critical in classifying individuals are sex, SES, and race/ethincity--all variables shown to be related to achievement. The data from IDEA's data bank offer the possibility of comparing students along these characteristics. Classes could be selected which contain fairly equal-sized subgroups of male and female students, high and low SES students, or subgroups of two different races (either white-black or white-Mexican American). The climate scores of these two subgroups could then be systematically compared to see if the subgroups perceive the class differently. This would determine whether or not there are subgroup climates based on sex, SES, or race/ethnicity instead of one climate perceived by all class members.

If class climate scores are viewed as measuring classroom characteristics, one would not expect significant differences among subgroups of students aggregated according to individual characteristics. Since students share the same classroom experiences, there should be similar perceptions of the climate, regardless of subgroup. If differences were found to exist, and one were to maintain the assumption that differences were due to classroom characteristics, the argument would need be made that the student subgroups were receiving differential treatment within the same classrooms. In either case, the most appropriate unit of analysis for pursuing a comparison of student subgroups would be the classroom.

Using the classroom as the unit of analysis restricts the total number of classes that can be used appropriately to compare subgroups. First of all, taking subgroups based on race/ethnicity, there are only six schools in the sample that have a near enough racial/ethnic balance to offer the potential of comparisons between these groups at the classroom level. There are two schools in the same school district that have a fairly even balance of Hispanic and Anglo students and four schools in two school districts that have a fairly even balance of black and white students.

The schools having a balanced Hispanic and Anglo sample are those located in the southwestern area of the U.S. They are the junior and senior high schools of a rural district which is situated next to a fairly large city. For purposes of this study, these schools will be called Fairfield Junior and Senior High School. At Fairfield High School, the sampled racial/ethnic composition is 42% Hispanic and 53% Anglo and, at the junior high, it is 50% Hispanic and 46% Anglo. The socio-economic status of the families sending children to these schools is, on the average, middle to low. The Hispanic families and about 50% of the Anglo families occupy the lower half of the scale used to compute SES.

The black and white schools also consist of junior high and high schools from the same district. However, the two school districts from which the four schools are drawn differ substantially. One, containing the schools this study has named Palisades Junior High and Palisades High, is an urban district located in a large city in the South. Although the district is urban, it is certainly not inner city. The students attending this school belong to families whose socio-economic status we have rated as mid to high. About 80% of the white families and 50% of the black families occupy the upper half of our SES scale. There is about a 50 - 50 racial mix in the high school and about 45% Black and 50% white ratio in the junior high.

In contrast, the second black-white district, containing schools this study named Laurel Junior and Senior High, is located in a rural area of the same southern state. Unlike the other southern district, the overall socio-economic status of the families sending children to this school is rated as low. About 55% of the white families and about 80% of the Black families occupy the lower half of this study's SES rating scale. The racial make-up at both the junior and high school is about

51% white and 49% Black.

Procedure (Hispanic/Anglo Comparison)

Since the appropriate unit of analysis for this study was deemed to be the classroom, it was necessary to identify the classrooms at each of the six schools which contained a reasonable balance of white and minority students. The decision was made to eliminate all classes which did not contain at least five students from each of the two subgroups. This decision reduced the number of classes available for subgroup comparison from 75 to 38 at Fairfield, from 84 to 51 at Palisades and from 48 to 30 at Laurel. The number of subject areas which could be included in the study was also reduced by the requirenent of at least 5 students from each subgroup in a class. The following subject areas were eliminated: foreign languages, vocational education, and physical education. The number of classes meeting the stated critereon at each school and for each of the remaining subject areas can be found in Table 2.

Table 2. Valid Classes at Each School For The Five Subject Areas

		Subject Area					
District		Eng	Math	Social Studies	Science	Art	Total
Fairfield	High	5	5	4	3	4	21
	Junior	2	5	3	4	3	17
Palisades	High	7	6	7	7	5	32
	Junior	5	5	4	1	4	19
Laurel	High	3	3	2	1	1	10
	Junior	7	4	4	3	2	20
Total		29	28	24	19	19	119

For each of the valid classes a separate mean for each climate scale was computed for each of the two subgroups within each class. Thus, each class has either a Hispanic and Anglo score or a black and white score, depending upon the school within which the class is found.

Analysis of variance with repeated measures was determined to be an appropriate analytical procedure for determining the main effect of race/ethnicity while also testing for possible interactions between race/ethnicity, level, and subject area. This design treats each class as a single unit, using the two within class subgroup scores as the repeated measures. This permits a comparison of the two subgroups. The Biomed BMDP2V analysis of variance program (Biomedical Computer Programs, P-Series, 1979) was well suited for this purpose and was used for the necessary calculations.

Results (Hispanic/Anglo Comparison)

The analysis of variance performed on the Hispanic/Anglo data uncovered few significant main effect differences. There were significant differences between the two subgroups at the .05 level or better for only three of the 18 climate scales. The means for the two subgroups on these three scales are reported in Table 3.

Table 3. Hispanic/Anglo Subgroup Means for Climate Scales Having Significant Main Effects for Race/Ethnicity

Climate Scales	Anglo			Hispanic		
	$\overline{X}$	SD	N	$\overline{X}$	SD	N
Teacher Favoritism	2.56	0.42	38	2.35	0.36	38
Student Cliqueness	2.93	0.26	38	2.70	0.26	38
Task Difficulty	2.16	0.30	38	2.29	0.28	38

Table 4 represents a complete anova table for one of these scales--student cliqueness. This table is exemplary of the design used throughout this portion of the study to test for subgroup differences. The results for subsequent main and interaction effects will be reported in summary form. For this portion of the study, only the results for the within analyses will be reported.

TABLE 4

Analysis of Variance for Student Cliqueness

Source	df	Mean Square	F
Between			
Level (L)	1	0.351	4.66^{*}
Subject (S)	4	0.126	1.67
L X S	4	0.047	0.63
Error (B)	28	0.075	-
Within			
Race (R)	1	1.069	20.84^{**}
R x L	1	0.032	0.63
R x S	4	0.016	0.31
R x L x S	4	0.049	0.96
Error (w)	28	0.051	-

$^{*}p$ .05

$^{**}p$ .001

The subgroup means indicate that the Anglo students perceive their teachers as showing more Favoritism (F=10.94, $p < .001$) and perceive that there is more Student Cliqueness in the classes than do the Hispanic students. For the third scale, the Hispanics score higher. They perceive more Task Difficulty (F=7.08, $p < .01$) than do the Anglo students.

Of all of the possible interactions between race/ethnicity, level, and subject, none were significant at the .05 level or better. It was not possible to expand the repeated measures portion of the design to include race/ethnicity by sex interactions because of class size imbalances. However, in addition to the analyses reported above, analyses of variance with a repeated measures factor were also computed on the same data using sex as the repeated factor. The design was identical to the one used for race/ethnicity with the sex variable being substituted for race/ethnicity. These analyses resulted in nearly four times the significant main and interaction effects as did the race/ethnicity computations.

Even though there were too few cases to test for race/ethnicity by sex interactions, it is unlikely that such a test would have changed the results to any great degree. Although there are many more significant results from the male/female analyses, the main and interaction effects are not found on the same scales as those showing significant race/ethnicity results.

Discussion (Hispanic/Anglo Comparison)

The purpose of conducting the foregoing analyses was to examine to what extent within class subgroups (aggregated according to critical individual characteristics) differ in their perceptions of class climate. Race/ethnicity is a variable that has been found to have powerful associations with achievement, and since it has been demonstrated that class climate scores are predictive of student and class achievement (Anderson & Walberg, 1968; Walberg and Anderson, 1972; Walberg, 1969), it was anticipated that within classroom subgroups aggregated by race/ethnicity might report differing perceptions of their class climate. Since Anglo students generally have higher achievement, it was anticipated that they would also view the climate more positively.

Judging from the analyses of the data from these two schools, Hispanic and Anglo perceptions of class climate do not differ to any large degree. Of course, the results obtained from these two schools cannot be generalized to a larger population. Even so the results are interesting. The significant differences between the subgroups are found on two scales that are basically affective and on one that is not. The scale that is not affective is Task Difficulty. As might be expected considering the problems that Hispanics are reported to have in our public schools (U.S. Commission on Civil Rights, Mexican American Education Study, 1971 - 1974), the Hispanics perceive their classroom tasks as being more difficult than do the Anglo students.

Both of the other scales for which there was a main effect were negative. The higher the score on the scales, the more negative the perception of the class. Unlike what one might expect, the minority subgroup has lower mean scores--hence, more positive perceptions of the class--than does the Anglo subgroup. The Anglo students perceive more Teacher Favoritism and more Student Cliqueness in their classes than do the Hispanic members of the same classes. Both of these scales focus on student perceptions of favoritism--favoritism from the teacher for one scale and favoritism among students for the other. It is not clear why the Anglo students feel there is more favoritism than do the Hispanic students. Nonetheless, one would expect the results to be reversed, with the minority group perceiving more.

In any case, the differences between the two subgroups are not large and are not in the direction one would expect. The two affective scales which have significant main effects offer evidence that the minority students have more positive perceptions of their classroom experience than do the Anglo students. This impression is strengthened if the scales which are significant at the .10 level are included. For each of scales that would be added--Student Decision-Making, Classroom Dissonance and Classroom Physical Appearance--the Hispanic subgroup has more positive perceptions than the Anglos. Thus, the differences between the two groups are minimal and the difference that obtain generally show the Hispanic subgroup to have more positive perceptions of the class than does the Anglo subgroup.

Results (Black/White Comparison)

The analyses of variance performed on the data collected in the Black and white schools show almost three times as many significant main effects for race as does the Hispanic and Anglo data. There are main effects for race which are significant at the .05 or better level for eight of the eighteen climate scales. These scales are: Student Decision-Making ($F=10.29$, $p < .01$), Task Difficulty ($F=4.59$, $p < .05$), Student Competitiveness ($F=23.52$, $p < .000$), Classroom Physical Appearance ($F=20.77$, $p < .000$), Student Satisfaction ($F=11.36$, $p < .001$), Peer Esteem ($F=16.16$, $p < .000$), Instructional Practice: Knowledge of Results ($F=4.85$, $p < .05$), and Instructional Practices: Organization ($F=7.18$, $p < .01$). The means for these subgroups can be found in Table 5.

TABLE 5

Black/White Subgroup Means for Climate Scales Having Significant Main Effects for Race

Climate Scales	Whites			Blacks		
	$\overline{X}$	SD	N	$\overline{X}$	SD	N
Student Decision-Making	2.13	0.35	81	2.24	0.32	81
Task Difficulty	2.03	0.37	81	2.12	0.33	81
Student Competitiveness	2.36	0.31	81	2.59	0.31	81
Classroom Physical Appearance	2.47	0.49	81	2.72	0.41	81
Student Satisfaction	2.72	0.47	81	2.87	0.35	81
Peer Esteem	2.96	0.25	81	3.08	0.24	81
I.P; Knowledge of Results	3.14	0.36	81	3.23	0.34	81
I.P; Organization	2.86	0.38	81	2.97	0.27	81

As can be easily seen, the black subgroup has a higher mean score than the white subgroup on all eight of these dimensions. Six of the scales are positive. The Blacks perceive more Student Decision-Making, they have more general satisfaction, they rate the physical appearance of their classes higher, they rate the instructional practices of the classroom higher--both their Knowledge of Results and the way the class is organized--and they have higher Peer Esteem than do their white classmates. In addition, they have higher means on two scales which are more negative. They perceive more Student Competitiveness and they perceive their classroom tasks as being more difficult than do the whites.

In addition to these main effects for race, there are also some scales for which there are interactions between race and the other variables entered into the analyses of variance. These variables are level of schooling and subject area, and, since the black and white schools come from two different school districts, district was included as a variable in the analyses. Again, the number of cases limited the analyses possible. There were not enough cases to compute analyses for race, level, district and subject area for all five subjects. Instead analyses were computed for race, level, district, and subject area only for the subjects English, Math, and Social Studies. Separate analyses, including the five subject areas, were computed first for race, level and subject, and second, for race, district and subject. This design gives adequate attention to the important possible interactions. It was also decided that a more conservative approach to statistical significance would be taken when examining the higher order interactions. To help minimize the reporting of relationships due to chance alone, only those interactions significant at the .01 level or better will be reported.

The analysis focusing on race, level and subject resulted in interactions only between race and level, and for only two of the climate scales--Student Compliance ($=10.20$, $p < .01$) and Student Apathy ($F=12.54$, $p < .001$). Table 6 presents the summary of means for these significant interactions.

TABLE 6

Black/White Means for Climate Scales Having Significant Interactions for Race by Level by Subject Analyses

		Level		
Climate Scales	Race	High	Junior High	Total
(n)		(42)	(39)	(81)
Student Compliance	White	3.27	3.42	3.29
	Black	3.30	3.30	3.30
Student Apathy	White	2.13	1.97	2.05
	Black	1.94	2.07	2.00

For both of the race by level interactions it is the white subgroup that displays the larger level differences. The Black students perceive equal amounts of Student Compliance at both levels of schooling, but the whites perceived considerably more "compliance" at the junior high level. For the Student Apathy scale, the perceptions of the two groups vary in opposite directions. The white students perceive more "apathy" at the high school level and the Blacks perceive more at the junior high school.

The separate analysis conducted for race, district and subject resulted in only one interaction with race that is significant at the .01 level or better. The significant interaction is one between race and district for the Student Apathy scale (F=8.60, $p < .01$). The means summarizing this interaction are found in Table 7.

TABLE 7

Black/White Means for Climate Scale Having
Significant Interaction for Race by District by
Subject Analyses

		District		
Climate Scale	Race	Palisades	Laurel	Total
(n)		(51)	(30)	(81)
Student Apathy	White	2.05	2.06	2.05
	Black	1.92	2.16	2.00

Note: Non-significant interactions are not shown.

As can be seen, the white subgroup has about the same score at both districts. The interaction, of course, comes about primarily from the Black aggregate difference between districts.

The separate analysis computed for race, level, district, and subject (English, Math, Social Studies) resulted in only one additional interaction significant at the .01 level or better. That interaction is between race, level, and district on the Student Compliance scale (F=7.33, $p < .01$).

The means reflecting this interaction are reported in Table 8.

TABLE 8

Black/White Means for Climate Scale Having Significant Interaction for Race by Level by District by Subject Analysis

Climate Scale=Student Compliance

			District		
Level	Race		Palisades	Laurel	Total
High	White		3.14	3.41	3.22
	(n)		(20)	(8)	(28)
	Black		3.34	3.42	3.36
		Total	3.24	3.42	3.29
			(40)	(16)	(56)
Junior High	White		3.51	3.41	3.46
			(14)	(15)	(29)
	Black		3.28	3.42	3.35
		Total	3.40	3.42	3.41
			(28)	(30)	(58)

Note: Non-significant interactions are not shown.

While these means represent a little more complex pattern of interactions, some observations can be made about the relationship among race, level and district. First of all, there is little difference at Laurel between racial subgroups or levels of schooling. At Palisades, in contrast, there are considerable differences between both of these variables. At Palisades High the Blacks perceive more "compliance" than do the whites. In contrast, at Palisades Junior High the white subgroup perceives more "compliance". Overall, and for the whites, there is a higher mean at the junior high level on this scale, but the Blacks have a higher mean at the high school level.

Discussion (Black/White Comparison)

While there were few racial/ethnic subgroup differences in perceptions of class climate for the Hispanic and Anglo schools, there are nearly three times as many for the Black and white schools. Nearly half (8 of 18) of the climate scales were found to have main effects for race at the .05 level or better. Since, on the average, Black students have lower achievement and less success in schools than do whites, it would be expected that the whites would have more positive perceptions of the class climate than would the Black students. In fact, the Blacks have more negative perceptions than the Anglos on only one scale--Task Difficulty. Certainly, students having difficulty in school would be expected to have higher means on this scale--means that would indicate that the classroom tasks are considered difficult. While the Blacks respond as expected on this scale, they also have higher mean scores for six scales which are positive. The Black subgroup has more positive perceptions of Student Decision-Making, Student Satisfaction, the Classroom Physical Appearance, Peer Esteem, and the instructional practices of Knowledge of Results and Organization. The white subgroup does not have more positive perceptions on any of the scales which might be considered to be mainly affective.

It is also interesting to see what types of climate scales display differences between subgroups. Some of the climate scales seem to group together into separate, larger groups. The three obvious larger categories are: Teacher-student affective scales (Teacher Concern, Teacher Authoritarianism, Teacher Enthusiasm, Teacher Punitiveness, and Teacher Favoritism), Student Alienation (Student Apathy, Student Compliance, and Classroom Dissonance), and Instructional practices and processes (Teacher Clarity, Knowledge of Results, Task Difficulty, and Organization). Of the three large categories, only the latter displays subgroup differences. The categories of "teacher-student affect" and "student alienation", where one would expect evidence of racial differences or racial conflict, are not significantly different for the racial groups. Of the final scales which identify differences, Student Decision-Making could be included with the "instructional practices" scales and the others stand on their own, more or less, as independent constructs. If pushed, three of them could be united by the fact that they record satisfaction with varying aspects of classroom experience: Peer Esteem questions satisfaction with student-student interactions, Classroom Physical Appearance questions satisfaction with the physical environment of the class, and Student Satisfaction questions general feelings about the class. The Blacks are more satisfied with each of these areas.

In summary, the two subgroups do not appear to show feelings of conflict with one another or differential feelings toward teachers. However, the Blacks are more satisfied with student-student interactions, the appearance of their classes, and they feel more satisfied, in general, about their classes. They also perceive a variety of instructional practices more favorably. While it is difficult from these analyses to understand the origins of these differences, the climate scales seem to be uncovering systematic and non-contradictory differences between the two groups.

In contrast to the main effect differences, the significant interactions are interesting mainly because there are so few. There are none for any combination of interactions which include the variables race and subject. The two significant interactions between race and level are with scales forming part of the large category of "student alienation". These scales are

Student Apathy and Student Compliance. The general trend that these record is that the white students perceive considerably more "student alienation" in high schools and the Black students perceive somewhat more in junior high schools. The one race by district interaction reports that Black students perceive more classroom dissonance at Laurel and whites perceive more at Palisades.

These sparse results from the race by district interactions are particularly interesting because the two districts are so disimilar—disimilar in location, size, and SES. While there would, no doubt, be differences between the two districts if the data were analyzed ignoring the subgroups, one might have expected more interactions with race caused by district differences—especially differences in SES.

Results (Male/Female Comparison)

Another student variable that might have an effect on climate perceptions is student sex. This is a variable that has been used in several other climate studies. The results of these studies is not clear. Moos (1979), and Moos and Trickett (1974) reported that the classes they examined did not differ in perceptions by sex. Walberg and Ahlgren (1970), however, reported that the higher the proportion of girls in the class, the higher the class would score on favorable scales and the lower on unfavorable scales. Choo (1976), likewise, found climate differences based on sex. None of these studies analyzed the effect of sex by aggregating subgroups based on sex at the classroom level.

Essentially, the same procedure was used for the male/female subgroup comparison as was used for the ethnic subgroup comparison. Classes were identified which contained at least five members of each subgroup. These were subjected to an analysis of variance with a repeated measures factor--testing for a main effect of sex and for interactions between sex, level, and subject or for interactions between sex, school district and subject. The greatest difference between the male/female and the ethnic comparisons was the substantially larger number of classes available for the gender comparison. All of our schools, naturally, were quite equally balanced according to gender so we were able to use all of the schools, except the smallest (Dennison), in the analyses. These analyses were also computed, using the same five subject areas.

The analyses of variance performed on the data aggregated according to classroom subgroups based on sex found significant main effects for sex on nearly all of the scales. Fifteen of the eighteen scales were significant at the .01 level or higher. (The more conservative .01 significance level was selected for these analyses.) There were double the number of significant differences among these two subgroups as compared to the ethnic comparisons. The scales for which there was a significant main effect are: Teacher Concern (F=9.9, p <.01), Teacher Punitiveness (F=72.91, p <.000), Teacher Authoritarianism (F=109.28, p <.000), Teacher Favoritism (F=29.85, p <.000), Teacher Enthusiasm (F=28.5, p <.000), Peer Esteem (F=211.26, p <.000), Student Decision-Making (F=44.98, p <.000), Classroom Dissonance (F=85.33, p <.000), Student Competitiveness (F=280.19, p <.000), Student Cliqueness (F=8.54, p <.004), Student Compliance (F=191.91, p <.000), Student Apathy (F=34.31, p <.000), Knowledge of Results (F=11.12, p <.001), Task Difficulty (F=109.07, p <.000) and Organization (F=63.21, p <.000). The only scales not showing a main effect for sex were Student Satisfaction, Teacher Clarity, and Classroom Physical Appearance. The means for the significant scales can be found in Table 9.

Females have higher scores on almost half the scales. They perceive more Teacher Concern, Teacher Enthusiasm and Student Compliance, better Knowledge of Results and Organization and greater Peer Esteem. The males, in contrast, perceive more Teacher Punitiveness, Teacher Authoritariansim, Teacher Favoritism, Classroom Dissonance, Student Competitiveness, Student Decision-Making, Student Apathy, Student Cliqueness, and Task Difficulty.

The analysis of variance focusing on sex, level and subject resulted in interactions only between sex and level, and for only four climate scales. They are Teacher Favoritism (F=9.66, p <.002), Student Decision-Making (F=7.3, p <.007), Student Cliqueness (F=7.57, p <.006) and Student Compliance (F=8,83, p <.003). Table 10 presents a summary of means for these significant interactions.

TABLE 9

Male/Female Subgroup Means for Climate Scales Having Significant Main Effects for Sex

Climate Scales	Males			Females		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Teacher Concern	3.10	.41	549	3.14	.47	549
Teacher Punitiveness	1.62	.30		1.53	.28	
Teacher Authoritarianism	2.09	.35		1.96	.42	
Teacher Favoritism	2.33	.32		2.24	.40	
Teacher Enthusiasm	3.27	.34		3.34	.33	
Peer Esteem	2.90	.26		3.05	.25	
Student Decision-Making	2.23	.28		2.15	.40	
Classroom Dissonance	2.14	.40		2.01	.41	
Student Competitiveness	2.53	.33		2.28	.28	
Student Cliqueness	2.72	.31		2.68	.29	
Student Compliance	3.14	.34		3.31	.28	
Student Apathy	2.05	.32		1.98	.39	
Knowledge of Results	3.07	.33		3.11	.31	
Task Difficulty	2.18	.28		2.04	.31	
Organization	2.85	.24		2.93	.30	

TABLE 10

Male/Female Means for Climate Scales Having Significant Interactions for Sex by Level

Climate Scales	Sex	Level		
		High	Jr. High	Total
(n)		(287)	(262)	(549)
Teacher Favoritism	Male	2.32	2.35	2.33
	Female	2.17	2.32	2.24
Student Decision-Making	Male	2.24	2.21	2.23
	Female	2.20	2.10	2.15
Student Cliqueness	Male	2.68	2.77	2.72
	Female	2.60	2.77	2.68
Student Compliance	Male	3.11	3.17	3.14
	Female	3.31	3.30	3.31

None of these interactions change the order of which gender scores highest on each scale (the two sexes have the same score on Student Cliqueness at the junior high school level, however). Only the degree of difference between males and females change by level for these scales. There is a greater difference between the subgroups at the high school level for Teacher Favoritism, Student Cliqueness and Student Compliance, and at the junior high level for Student Decision-Making.

The analysis that tested for sex by school district by subject interactions resulted in a significant interaction effect for only a single scale. The scale was Teacher Clarity and the interaction was between sex and district (F=2.41, <.006). There was an interaction because males scored higher on this scale at Fairfield, Rosemont, Atwater and Bradford and the females scored higher at the remaining school districts. The comparison of means can be seen in Table 11.

Discussion (Male/Female Comparison)

Of the student background characteristics examined thus far--ethnicity and sex--sex has the most effect on student perceptions of class climate. There are almost twice as many scales showing significant differences between subgroups based on sex as were found in the analyses of the ethnic subgroups. While the greater significance of the differences between subgroups based on sex may be due, in part, to the much larger number of cases, a comparison of mean differences suggests that the larger number of significant main effects for sex represents more than an increased n.

The main effects for sex on these climate scales follow a clear pattern. In almost every case, the female students perceive the classroom climate more favorably. This is so regardless of whether the scales relate to teacher-student interactions, student-student interactions or instructional practices. Female students perceive more Teacher Concern, and Teacher Enthusiasm, while male students perceive more Teacher Punitiveness, Teacher Authoritarianism and Teacher Favoritism. Females perceive more Student Compliance and males perceive more Student Cliqueness, Student Apathy, Student Competitiveness and Classroom Dissonance. Females perceive more Knowledge of Results and better Organization, and males perceive more Task Difficulty. Females also have higher scores on Peer Esteem. The only scale that departs from this pattern is Student Decision-Making. The male students score higher on this scale.

While gender differences have more pervasive effects on the climate scores than one would expect, the direction of the differences is not surprising. These results conform to conventional stereotype notions of the

TABLE 11

Male/Female Means for Climate Scales Having Significant Interactions for Sex by District

School District	Male	Female	Total
Vista	3.07	3.09	3.08 (n=54)
Crestview	2.96	3.12	3.04 (n=42)
Fairfield	2.95	2.87	2.91 (n=41)
Rosemont	3.18	3.15	3.16 (n=58)
Newport	3.01	3.15	3.07 (n=60)
Woodlake	3.20	3.21	3.20 (n=43)
Atwater	3.07	3.06	3.06 (n=34)
Palisades	3.09	3.10	3.09 (n=56)
Laurel	3.14	3.17	3.15 (n=36)
Manchester	3.01	3.09	3.05 (n=50)
Bradford	2.95	2.94	2.94 (n=53)
Euclid	3.06	3.13	3.10 (n=22)
Total	3.06	3.09	3.07 (n=549)

way the two genders adapt to schools. The climate scores indicate that the females perceive the class to be more compliant, to have more positive relations with the teacher and to receive better instructional practices. The males, in contrast, see the classes as manifesting less compliance and more negative teacher affect. They, also, perceive more student alienation and misbehavior. In addition, the males feel the classes are more difficult than do the females.

Faced with these differences of perception based on sex, the natural question to ask is what accounts for this difference. Is this evidence that males and females are treated differently in the classroom or evidence that they should be? Different perceptions could result from innate differences between the sexes but this explanation is both unlikely and would be unpopular. More plausible would be the explanation that the responses are evidence that the students have been socialized into different roles based on sex.

This study can not, nor was it intended to, discover the source of these differences in perceptions. Regardless of the source of the differences, they are significant, at least for this sample. And, while the differences do not represent large differences in subgroup means, they do suggest another approach to modifying classroom climate perceptions. Whether the differences represent background differences of the students or differences in the way classrooms operate, recognition of the differences in subgroup perceptions and attempts on the part of teachers to minimize the impact of these differences might affect a change in class climate perceptions.

The interactions between sex and other variables used in the analysis of variance were not numerous and do not seem to be particularly important. Sex by level interactions were significant for four scales. But in each case, level differences changed the magnitude of the difference between the subgroups, but not the direction. The one significant interaction between sex and school district was for a scale, Teacher Clarity, for which there was no significant main effect for sex. For this scale, females score highest at eight districts and males at seven districts. The differences are not great in any case.

Results (Parental Income)

While we had intended to compute the same analyses for within class subgroups based on SES, this proved to be impossible. Since not all of our data sites would permit the questioning people under 18 years of age about SES, in the interest of consistency, we did not request this information from any students. The information, instead, was sought from parents. The parent responses would, then, be matched with the students--permitting the use of SES as a student variable as well. Unfortunately, as with other studies of this type, the parental response rate was less than gratifying. Consequently, we simply do not have enough parent-student match-ups to allow us to aggregate groups based on SES at the classroom level. We would not have been able to find a sufficient number of classes with at least five individuals with SES data for both high and low SES.

Since it was not possible to do an analysis using data aggregated at the classroom level, the decision was made to analyze the relationship between parental income and student perceptions of the class over all parent-student match-ups. This analysis was done using multiple regression to relate parental income to the climate scales. The SPSS procedure Regression was used to perform the analysis (Nie, et.al., 1975).

In this case, a version of the climate instrument containing 12 scales was used in the analysis. This version was derived by combining several of the 18 scales having relatively high intercorrelations into two new scales--Teacher Affect and Instructional Practices. These new scales might lose some of the conceptual clarity of the separate scales, but it was considered necessary to reduce the intercorrelation of the scales that were going to be used in multivariate analyses.

The new Teacher Affect scale resulted from a combination of the Teacher Concern, Teacher Authoritarianism, Teacher Enthusiasm and Teacher Punitiveness scales. Instructional Practices combined Teacher Clarity, Knowledge of Results, and Organization. The ten remaining separate scales are: Teacher Favoritism, Peer Esteem, Student Decision-Making, Classroom Dissonance, Student Competitiveness, Student Cliqueness, Student Compliance, Student Apathy, Classroom Physical Appearance, and Task Difficulty.

Even after collapsing these scales, the intercorrelations between some of the scales are still relatively high. When deriving the original scales, considerable empirical and rational analysis of the relationship of items and scales convinced us that it would be better to retain conceptual distinctness among the scales while conceding some overlap among them rather than to lose this distinctness by reducing the number of scales. The 12 scale version of the instrument further reduces the intercorrelations.

It should also be recognized that the magnitude of these intercorrelations is the result, in part, of the type of analysis selected. A between analysis, which is what is being employed in most of this study, results in considerably larger intercorrelations than would either a pooled within analysis or an analysis across all cases. Finally, in spite of the scales being intercorrelated, the separate scales behave quite differently when related to other variables.

The multiple regression analysis of parental income and climate resulted in a multiple R of .20 which represents an R-square of .04. The simple r's and beta weights for the separate scales can be seen in Table 12.

TABLE 12

Parental Income and Student Perceptions of Class Climate
(Multiple R=.20, R-Square=.04, F=16.0)

Variable	Simple r	Beta
(n=4752)		
Teacher Affect	03	11
Instructional Practices	-02	-10
Peer Esteem	04	04
Student Decision-Making	-03	-01
Classroom Dissonance	-08	-08
Student Competitiveness	-03	-03
Student Cliqueness	05	07
Student Compliance	02	01
Classroom Physical Appearance	-06	-07
Task Difficulty	-05	-05
Student Apathy	-05	-06
Teacher Favoritism	08	13

Decimal points have been omitted.

The standardized weights suggest that Teacher Favoritism, Teacher Affect and Instructional Practices are the most important of the 12 scales.

Discussion (Parental Income)

The analysis of the relationship between parental income and student perceptions of climate demonstrates that there is a statistically significant relationship between the two--a result due primarily to the large number of cases used in the analysis. There does not, however, appear to be a meaningful relationship between them. The multiple relationship between them can account for no more than 4% shared variance--hardly enough to suggest that SES affects climate to a meaningful degree. In addition, the separate scales with the highest beta weights present a somewhat puzzling picture. Students from wealthier families perceive more Teacher Concern in their classes, but they also see more Teacher Favoritism. There is an apparent contradiction between the two results. The students from families with higher income also approve less of the teachers' instructional practices. But, the small multiple R suggests that there is little need to be overly concerned with the relationship between parental income and climate scores.

Conclusions (Student Background/Class Climate)

These analyses were done to determine the impact of student background characteristics on student perceptions of classroom climate. The effects of three variables were tested. These variables--SES, sex, and ethnicity--are generally considered to be among the most important background characteristics. All three of these variables showed statistically significant relations with one or more climate scale but the degree of meaningfulness varied. Parental Income, which was used as the measure of student SES, was judged to not have an important relationship with classroom climate. The relationship between parental income and the combined climate scales could account for no more than four percent shared variance.

The analyses examining the effect of ethnicity utilized data from six schools--two with a fairly equal mix of Hispanic and Anglo students and four with a fairly equal mix of Black and white students. There were a number of subgroup differences which appeared when the data were aggregated by racial/ethnic subgroup at the classroom level. These differences, however, do not seem likely to help explain achievement differences among the groups. In the case of both minority groups, when there were significant differences between groups on a climate scale, it was generally the minority group that had the more positive score. Since climate scores have been linked to achievement and since the minority group members, as a whole, generally have lower achievement scores, it might have been expected that the minority subgroup would have had significantly more negative scores. This was not the case. The exception to this generalization, however, was that both minority groups perceived their classes as being more difficult than did the Anglo students. The Black subgroup, also, perceived their classes as being more competitive.

Of the two minority groups, the Hispanics differed with the Anglos on the fewest climate scales. In addition to finding their classes more difficult, they perceived less Teacher Favoritism and Student Cliqueness. The Black subgroup, in contrast, differed significantly with the white subgroup on eight climate scales. In addition to the Black subgroup's higher scores on Task Difficulty and Competitiveness, the subgroup had higher scores on six scales dealing mainly with general satisfaction and attitude toward the quality of teacher's instructional practices.

The student background characteristic most affecting class climate scores was found to be student sex. As previously reported, there were nearly twice as many climate scales showing significant differences for sex as for ethnicity. Basically, only the scales relating to general satisfaction with the class failed to discriminate between the sexes. The other scale scores seem to follow the pattern one would expect based on sexual stereotypes. The females see their classes as more compliant, having better relations with the teachers and manifesting better instructional practices than do the males. The males score higher on scales measuring negative teacher practices and measuring Student Conflict, Apathy, and Cliqueness. The males also perceive the classes as being more difficult.

At this stage, the question of whether individual student characteristics leads to differing perceptions of the class must be answered equivically. The analyses relating SES, ethnicity and sex to climate perceptions verify that differences obtain that are related to these characteristics. But, the differences are very small for SES, somewhat more important for ethnicity, and most important for subgroups based on sex. In most cases, the group differences seem to be consistent and offer the possibility of reasonable explanation. It, further, seems possible to identify climate dimensions that differ in salience for different samples. However, the actual difference in subgroup mean scores is not particularly great. It is, no doubt, most reasonable to conclude that, while the climate scales are more reflective of characteristics of the class than of characteristics of separate subgroups, salient subgroup differences do affect the extent of congruence among members of the class. Even so, the small magnitude of the differences between the two groups tends to strengthen the position that climate scores are reflective of classroom characteristics rather than characteristics of the respondents.

Teacher Characteristics and Classroom Climate

It would be logical to expect teacher background and attitude to have a strong effect on classroom atmosphere and outcome since the teacher has such a dominant role in the classroom. This expectation is evidenced in a large number of studies which have attempted to measure the effect of the teacher (most often using teacher personality measures) on the class. This research, however, has accomplished "strikingly little" (Dunkin and Biddle, 1974).

This expectation is no less powerful in research using climate measures. Indeed, one of the first climate instruments, Halpin and Croft's OCDQ (1963), focused primarily on the effects of the group leader, which in the case of the classroom is the teacher. More recently Walberg (1968) has attempted to determine the effect of teacher personality and attitudes on the climate of the classroom. This latter study offers support that teacher personality and attitudes do affect the class climate.

The Study of Schooling project collected matched teacher and classroom data that permits further examination of the relationship between teacher variables and the climate of the class. Although the teacher variables were not originally selected with the intention of comparing the teacher and class climate data, it is well suited for such a comparison. The teacher questionnaire was used to collect data on a vast number of variables many of which could be related to the class climate scales.

Procedure

The first step in relating the teacher variables and the class climate scales was to select the teacher variables that were most likely to covary with student perceptions of class climate. The initial selection was made on the basis of which variables seemed reasonable rather than on the basis of empirical evidence. The variables that were selected fell into four relatively separate groups: teacher demographics, teacher beliefs, teacher attitude toward career and school, and teacher description of classroom practices. Since the four subsets of variables were conceptually distinct, it was decided to relate each of these four groups separately to the climate scales. It was anticipated that doing so would maintain a conceptual distinction that otherwise would have been lost had all the teacher variables been analyzed together. It was further anticipated that separate analyses would facilitate interpretation of the results.

These groups of variables vary in their proximity to the classroom experience of the students responding to the climate scales. They also vary in their potential for possible manipulation. The first group of variables--teacher demographics are clearly characteristics of the individual teachers and are not generally considered classroom characteristics. These variables offer almost no potential for manipulation with the aim of improving classroom climate. But, in spite of the fact that these variables are teacher characteristics, they could still influence classroom atmosphere.
There is no reason that a teacher's age or sex or years experience, for example, might not affect class climate. The climate construct, after all, purports to measure student perceptions of the multitude of interacting variables which blend to establish the personality of the class. Teacher age and sex (and other demographic variables) are certainly among these interacting variables. If, however, these teacher demographic variables were found to account for a large portion of the climate variance, one would be forced to question the climate construct--concluding that climate

instruments measure teacher demographics instead of class personality.

Each group of variables can be examined in the same way. And, they will be discussed in such a sequence that each group becomes more proximate to the classroom and also more susceptible to manipulation.

The first subset of variables--teacher demographics--consists of six variables. These six variables are:

1. Age (scored 18 to 75)
2. Sex (male, female)
3. Which one of the following categories best describes your racial/ethnic background (white, non-white)
4. What is your approximate income (include your spouse's income if married) (less than $5,000, $5,000 to $9,999, $10,000 to $14,999, $15,000 to $19,999, $20,000 to $24,000, $25,000 or more)
5. What is the highest academic credential that you hold? (High school, Associate degree/Vocational certificate, Bachelor's degree, Master's degree, Graduate/Professtional degree--Ph.D., Ed.D., J.D., M.D., etc.)
6. How many years of teaching experience have you had? (1 to 60)

The second subset of variables measure a certain number of the teachers' educational beliefs. There are seven variables in this subset. They are:

1. Teacher Discipline and Control.* A scale composed of items measuring the degree to which teachers believe that strong discipline and tight control is necessary in the classroom.
2. Basic Subjects and Skills Emphasis.* A scale measuring the teachers opinion of the importance of basic skills and subjects.
3. Student Concern.* A scale measuring the teachers opinion of the importance of personal contact with students.
4. Student Participation.* Measures whether teachers feel students should participate in deciding about various classroom options.

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* See Appendix B for a list of variables which define these scales.

5. to 7. These three scales measure which of three functions of schooling teachers believe should be most emphasized at the school: 5. Intellectual Development, 6. Personal Development, or 7. Vocational Development).

The third set of teacher variables pertain to the teacher's attitude toward his/her career and school. These seven variables are:

1. Looking back on your expectations before you started your present career, were those expectations fulfilled? (Yes or no).
2. If you had it to do all over again, would you choose education as a profession? (Yes, no).
3. How much control do you have overall in how you carry out your job? (None, little, some, a lot, complete).
4. Is the amount of control that you have over your job: less than you like to have, about the amount you like to have?
5. Students are often given grades A, B, C, D, and FAIL to describe the quality of their work. If schools could be graded in the same way, what grade would you give this school? (FAIL, D, C, B, A)
6. How much help do you feel you have in carrying out your job? (Not enough, adequate).
7. Job Satisfaction.* This scale measures the teacher's general satisfaction with his/her job.

The final group of variables are those the teacher responded to in answering questions about his or her class that was also being surveyed. This group is called teacher description of classroom practices. There are fewer variables in this category but, since they pertain directly to the class from which the comparative climate data is obtained, the relationship between these variables and class climate might prove to be stronger than the relationship with the teacher variables which are more loosely tied to the specific class. These six variables are the following.

1. Approximately how much time do you usually spend per week planning and preparing materials for this class? (0-1 hour, 2-3 hours, 4-6 hours, 7-10 hours, 11-15 hours, 16 or more hours).

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* See Appendix B for a list of variables which define this scale.

2. to 4. On the average, approximately what percentage of class time is spent on each of the following:
   (2) Daily routines (0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%)
   (3) Instruction (same as above)
   (4) Getting students to behave (same as above)

5. Approximately, how much time do you expect students in this class to spend on homework each day for this class? (None, about a half an hour, about one hour, about two hours, more than two hours).

6. Relevance of class content. (Combines two items asking how useful the teacher expects it to be later in the students' lives--very useless, somewhat useless, somewhat useful, very useful).

The final item in this set is clearly of a different type than the previous five. The teacher is not describing classroom practice with this item. However, the item is class specific like the others and will be analyzed with these other class specific items.

In each case, the sets of teacher variables were compared to the version of the climate instrument containing 12 instead of 18 scales.

Analysis

The analytic technique which was used to relate the teacher variables to the student perceptions of class climate was canonical correlation. This analytic method is appropriate because it provides descriptions and the levels of significance of the overall relationship of two sets of variables, taking into account both the correlations of the variables within each set as well as the correlations between the two sets. The canonical loadings obtained from canonical analysis allow conclusions to be made about the complex relationship between two sets of variables--each set containing two or more variables.

The analyses of the relationships between student climate perceptions and different sets of teacher variables were computed, using the Biomed BMDP6M Canonical Correlation Program (Biomedical Computer Programs, P-Series, 1979). In addition to the canonical correlations and the standardized coefficients, this program also computes the canonical loadings (the correlations between variables and canonical variates), which are used to interpret the relationship between sets of variables.

This program also computes skewness and kurtosis for each variable. Of the variables used in these computations only a few departed from normality, and then only slightly. These departures from normal distributions would be very unlikely to affect the results, so all variables have been used in the analyses.

The sample used in these analyses was the junior high and high school sample for five subject areas: English/language arts, mathematics, social studies, science, and the arts. It was decided to omit foreign languages, vocational education and physical education from the analyses since there were fewer classes for foreign languages and physical education, both foreign languages and vocational education enrolled a restricted range of students, and physical education classes were usually composed of only one gender.

In each case analyses were computed separately for the high school and the junior high school samples. The unit of analysis in each case was the classroom, utilizing the teacher data and aggregated (means) student data. The following analyses are based on no fewer than 397 classes at the high school level and no fewer than 277 at the junior high school level.

Results (Teacher Demographics)

The first group of variables analyzed were those classified as teacher demographic variables. At the high school level, there were four canonical correlations that were significant at the .01 level and at the junior high school level, there were two. (The univariate summary statistics for these variables and those used in the analyses that follow can be found in Appendix C.) (The zero-order correlations for these variables are available from the author on request.) The canonical correlations for the high schools ranged from .41 to .22 and for the junior high schools were .42 and .37. In this study, canonical correlations smaller than .30 will not be reported, regardless of statistical significance. Correlations less than .30 represent less than 10% shared variance between the two groups of variables and can, therefore, be judged to be of little meaningful importance. Judgments, as to the importance of the individual variable in the relationships established by the canonical correlations which exceed .30, can be made by examining the canonical loadings for each variate. The canonical loadings that are weighted .30 or higher (or -.30 or lower) for the significant canonical correlations found in the separate high school and junior high school analyses can be found in Table 13. In this and all the tables that follow the variables are arranged so that the variables with the highest loadings (and, therefore, the most importance) begin and conclude the list. The most important positively related variable begins the list and the most important negatively related variable concludes the list.

For the high schools, the first correlation indicates that older male teachers with higher credentials and more experience have classes that the students perceive as being more competitive, and lower in Peer Esteem and Classroom Physical Appearance. The second correlation mainly reflects the relationship between teacher sex and the climate scales. Female teachers are seen as having classes higher in Compliance and lower in Classroom Physical Appearance, Competitiveness and Decision-making.

The first significant correlation at the junior high school level indicates that younger female teachers with relatively fewer credentials and years experience and lower incomes have classes with better instructional practices and appearance, higher Compliance, and Peer Esteem and lower

Table 13

Teacher Demographics

High Schools	Teacher Variables	Loadings	Climate Scales	Loadings
1st Canonical	Years Experience	79	Student Competitiveness	39
	Age	64	Student Compliance	-31
.41	Highest Credential	62	Student Cliqueness	-35
	Teacher Ethnicity	39	Teacher Affect	-36
sig.=.000	Teacher Sex	-45	Peer Esteem	-51
			Class Physical Appearance	-56
2nd Canonical	Teacher Sex	75	Student Compliance	35
	Highest Credential	40	Class Physical Appearance	-35
.34			Student Competitiveness	-37
			Student Decision-Making	-53
sig.=.000				
3rd Canonical	Teacher Income	89	Instructional Practices	38
			Teacher Affect	31
.28			Student Cliqueness	30
			Teacher Favoritism	-32
sig.=.000				
Junior Highs				
1st Canonical	Teacher Sex	53	Instructional Practices	67
	Teacher Ethnicity	33	Class Physical Appearance	64
.42	Teacher Income	-52	Student Compliance	61
	Highest Credential	-55	Peer Esteem	43
sig.=.000	Age	-66	Teacher Affect	38
	Years Experience	-69	Student Apathy	-40
2nd Canonical	Teacher Income	48	Teacher Affect	63
	Age	-33	Instructional Practices	33
.37	Years Experience	-34	Student Apathy	-38
	Teacher Ethnicity	-58	Classroom Dissonance	-44
sig.=.000			Teacher Favoritism	-49
			Task Difficulty	-60
			Student Competitiveness	-77

Student Apathy. The second correlation relates higher income, lower age and experience and being non-minority to classes higher in Teacher Affect, and Instructional Practices, and lower in Student Apathy, Classroom Dissonance, Teacher Favoritism, Task Difficulty, and Student Competitiveness.

Discussion (Teacher Demographics)

The largest canonical correlations for the high and junior high schools represent canonical R-squares of .16 and .18 respectively. Obviously, this first subset of teacher variables does not account for a large amount of variance between the two sets of variables. The amount of variance accounted for is not inconsequential, but it is not large. Clearly, this climate measure is not measuring only teacher demographic characteristics.

Teacher demographic characteristics are classroom "givens" and are not among the variables one would attempt to change if the climate of the class were deemed in need of improvement. But, even if they would not be targeted for change, there is no reason why these variables would not have an impact on the atmosphere of the class. A teacher's age and sex may very well affect the way students interact in the classroom with the teacher and with one another. Sex and age, after all, are influential in other social situations.

The magnitude of the R-squares obtained from the canonical correlations between teacher demographics and classroom climate scales gives an estimate of the relationship between these teacher characteristics and the atmosphere of the class. They clearly do not account for much of the variance in class climate, but they obviously are related.

Within this context, some generalizations can be made about the relationship of individual variables. The first loadings for the junior high school canonical correlation and that of the first high school correlation are quite similiar. In both cases, years experience has the highest loading among the teacher variables with age, highest credential and sex all being important. In both cases, being more experienced, older, with more credentials and male is associated negatively with the positive climate scales. The opposite is also true. Apparently, teachers with more experience, etc. are not viewed as favorably as teachers with the opposite characterists. This relationship between years of teaching experience and climate score has been examined in other studies with conflicting results. Moos (1979), for example, found no relationship between the two, but Anderson, Walberg, and Welch (1969) found a relationship very much like the one reported here. They suggest that students feel more of a "unity in common task" with the inexperienced teachers--that they are learning with the teacher--and this leads to more positive classroom climate.

Teacher sex is important, also, in the second high school correlation. Being female, with higher credentials, is related to classes high in Compliance and low in Decision-making, Competitiveness, and Classroom Physical Appearance. In each of the correlations in which gender is important, being female is associated with higher Student Compliance. Moos (1979) also found teacher sex to be related to specific climate scales. But, Moos' scales and those used in this study are not similar enough to determine whether the findings of the two studies are parallel.

The second correlation at the junior high level, which relates teacher income and ethnicity to the climate scales, probably represents a school effect rather than an overall association between income and ethnicity and class climate. If more than a school effect were present, one would expect a more logical relationship between income and the other teacher variables generally associated with income--variables like age and years experience. In this case, lower age and experience are related to higher income. This is a condition that only seems logical if it is salary differences between schools that makes the difference. Unfortunately, limitations in time and resources prevented further untangling of these relationships.

Results (Teacher Educational Beliefs)

The analyses relating teacher educational beliefs to class climate scores resulted in fewer significant canonical correlations than the previous analyses. There were two significant correlations at the high school level and one at the junior high school level (see Table 14). The first significant high school canonical correlation has high positive loadings for Teacher Control and Basics and high negative loading for Student Participation. These loadings are associated with higher scores for teacher Favoritism and lower scores for Classroom Physical Appearance, Teacher Affect and Student Decision-making. The second correlation relates a higher score on the Intellectual Function and a lower score on the Vocational Function to lower scale scores for both Classroom Dissonance and Student Decision-making.

The first canonical correlation at the junior high level is essentially the same as the first high school variate except a few more variables are included. The most important of these are the climate scales of Task Difficulty and Student Apathy, which load positively, and Instructional Practices which loads negatively.

Discussion (Teacher Educational Beliefs)

The amount of variance shared between the teacher educational belief variables and the climate scales is essentially the same for both levels. The R-square for the first high school correlation is .15 and for the junior high school correlation is .14. As with the previous subset of variables, this subset does not account for a large amount of the variance

Table 14

Teacher Educational Beliefs

High Schools	Teacher Variables	Loadings	Climate Scales	Loadings
1st Canonical	Teacher Control	78	Teacher Favoritism	35
	Basics	53	Class Physical Appearance	-47
.39	Intellectual Function	36	Teacher Affect	-58
	Student Participation	-69	Student Decision-Making	-73
sig.=.000				
2nd Canonical	Intellectual Function	58	Classroom Dissonance	-39
	Vocational Function	-65	Student Decision-making	-56
.32				
sig.=.000				
Junior Highs				
1st Canonical	Teacher Control	82	Task Difficulty	58
	Basics	50	Teacher Favoritism	48
.38	Intellectual Function	46	Student Apathy	45
	Personal Function	-40	Classroom Dissonance	37
sig.=.000	Student Participation	-42	Peer Esteem	-33
			Instructional Practices	-59
			Class Physical Appearance	-64
			Teacher Affect	-70
			Student Decision-Making	-70

in the class climate scores. And again, though small, the amount of shared variance is sufficient that it should not be ignored. These teacher educational beliefs, apparently, do relate to climate scores and they do so in interpretable ways.

At both levels, teachers believing in greater teacher control, more emphasis on basic subjects and skills and relatively less student participation have classes which are perceived, quite understandably, as having less Student Decision-making. Classes taught by teachers with this combination of beliefs are also seen as having teachers who display relatively more negative affect toward the students and who show more favoritism among the students. The classes are also seen as having a less pleasant physical appearance. (This variable seems to have a large component of general student satisfaction or dissatisfaction, so it is not clear whether teachers with these beliefs actually have classrooms with a less pleasant appearance.)

With the exception of the Student Decision-making scale, these climate scales largely reflect the affective interaction between teachers and students. At the junior high school level, instructional scales are also found to be related to the same combination of teacher beliefs. Teachers holding the same beliefs are also seen as having more difficult classes but, at the same time, these teachers are seen as displaying poorer instructional practices. At both levels, teachers believing in greater teacher control and less student participation are viewed quite negatively, but only at the junior high level are they also seen as more difficult and less capable in their instructional practices. Perhaps, at the junior high school level, teachers believing in the importance of greater teacher control and less student participation are preoccupied with classroom management to the expense of instruction. Or, perhaps, students at this age level are indicating a preference for teachers using practices which involve more student participation.

In any case, at both levels there seems to be a conflict apparent in a number of climate categories--a conflict between the belief of teacher control and positive student perceptions of class climate.

The second high school correlation is less clear. Teachers believing that the intellectual function of the school is more important and the vocational less important have classes that are lower in Dissonance and Decision-making. Perhaps these teachers are more goal oriented and business like--leaving their students with less time and freedom to make decisions or misbehave.

Results (Teacher Attitude Toward Career and School)

The third series of analyses were computed using the climate scales and seven variables measuring teacher attitudes toward career and school. It was felt that the teacher's satisfaction with his/her career and school might relate to classroom interactions as measured by the class climate instrument.

The separate analyses for the high schools and junior high schools resulted in a correlation of .43 significant at the .000 level for the high schools and a correlation of .34 significant at the .02 level for the junior highs. The two levels are quite similar, as can be seen in Table 15. At the high schools, teachers who have higher scores on School Grade, Job Satisfaction, choose education again and control over job are in classes that the students perceive as having more Student Decision-making, Teacher Affect and Peer Esteem, better Classroom Physical Appearance and Instructional Practices and less Classroom Dissonance and Student Apathy. At the junior high school level, School Grade does not load on the variate, but the other high school teacher variables do. The junior high teachers also include higher scores on Satisfaction with Job Control and Expectations fulfilled.

Table 15

Teacher Attitudes

High Schools	Teacher Variables	Loadings	Climate Scales	Loadings
1st Canonical	School Grade	78	Student Decision-making	60
	Job Satisfaction	77	Teacher Affect	56
.43	Choose Education Again	66	Class Physical Appearance	56
	Control over Job	48	Peer Esteem	52
sig.=.000			Instructional Practices	34
			Classroom Dissonance	-30
			Student Apathy	-39
Junior Highs				
1st Canonical	Control over Job	85	Teacher Affect	71
	Satisfaction with		Instructional Practices	61
.34	Job Control	70	Class Physical Appearance	52
	Job Satisfaction	47	Peer Esteem	51
sig.=.02	Choose Education Again	38	Teacher Favoritism	-56
	Expectations Fulfilled	36	Student Apathy	-58
			Classroom Dissonance	-67

Decimal Points have been omitted.

As for the climate scales, Student Decision-making does not load on the first variate. Student Decision-making is replaced with a low score on Teacher Favoritism.

Discussion (Teacher Attitude)

The magnitude of the R-squares for the two levels is .18 for the high schools and .12 for the junior highs. This is similar to the amount of variance that the other significant variates have shared. These two correlations substantiate an interesting relationship between teacher attitude and student perceptions of the class. Teachers who are satisfied with their careers and school have classes in which students respond positively to a variety of climate scales. The canonical analysis, of course, does not imply causation. An equally plausible case could be made for the direction of causation being in either direction. Nevertheless, teacher attitude and student perceptions of the class are related, at least for this sample. An interesting difference between the two levels is that for the high school teachers the somewhat general items--school grade and job satisfaction--have the highest loadings with the positive climate scales, but for the junior high teachers it is the more specific items dealing with teacher control which have the highest loadings. This seems to suggest that, at the high schools, the teachers who are pleased with the school and the working conditions at the school have the classes with more positive climates. On the other hand, at the junior high schools, it is the teachers who are satisfied with the control they have over their classes who have the more positive climates.

Results (Teacher Perceptions of Classroom Practices)

The final group of teacher variables which were analyzed separately were those measuring the teacher's perception of his/her classroom practices as they pertained to the specific class being surveyed. The canonical analysis computed at the high school level found two canonical correlations significant at the .01 level (R=.55, R=.39) and the analysis at the junior high level found two (R=.43, R=.40). The variable loadings for these variates can be seen in Table 16.

The loadings for the first significant variate at the high school level demonstrates that in classes where teachers spend more time on behavior and less time on instruction and where less homework is expected, there are higher scores for Student Apathy, Classroom Dissonance and Student Cliqueness, and lower scores for Teacher Affect, Student Compliance, Instructional Practices and Peer Esteem. The second variate relates higher scores for Expected Homework, Teacher Preparation, and Time on Behavior to higher scores for Task Difficulty, Teacher Favoritism and Student Apathy, and to lower scores for Student Compliance, Classroom Physical Appearance, Teacher Affect, Instructional Practices and Student Decision-making.

The first of the significant variates at the junior high level relates classes in which teachers report expecting more homework, and spending more time on instruction and preparation to higher scores on Student Compliance, Peer Esteem, and Classroom Dissonance and lower scores on Student Decision-making and Student Apathy. The second variate relates teacher reports of more time spent on behavior, and less belief that the content is useful to classes with higher scores on Task Difficulty, Student Apathy, Classroom Dissonance and Teacher Favoritism and lower scores on Instructional Practices, Teacher Affect, Student Compliance and Peer Esteem.

Discussion (Teacher Perceptions of Classroom Practices)

The canonical R for the first variate, at the high school level, represents an R-square of .30--indicating that this subset of variables

Table 16

Teacher Perceptions of Classroom Practices

High Schools	Teacher Variables	Loadings	Climate Scales	Loadings
1st Canonical	Time on Behavior	80	Student Apathy	83
	Expected Homework	-48	Classroom Dissonance	78
.55	Time on Instruction	-76	Student Cliqueness	36
			Peer Esteem	-42
sig.=.000			Instructional Practices	-47
			Student Compliance	-50
			Teacher Affect	-62
2nd Canonical	Expected Homework	59	Task Difficulty	76
	Teacher Preparation	57	Teacher Favoritism	42
.39	Time on Behavior	52	Student Apathy	32
			Student Compliance	-33
sig.=.000			Class Physical Appearance	-47
			Teacher Affect	-50
			Instructional Practices	-68
			Student Decision-making	-74
Junior Highs				
1st Canonical	Expected Homework	91	Student Compliance	47
	Time on Instruction	40	Peer Esteem	42
.43	Teacher Preparation	36	Classroom Dissonance	33
			Student Decision-Making	-59
sig.=.000			Student Apathy	-59
2nd Canonical	Time on Behavior	87	Task Difficulty	68
	Usefulness of Content	-33	Student Apathy	58
.40			Classroom Dissonance	48
			Teacher Favoritism	41
sig.=.000			Peer Esteem	-39
			Student Compliance	-74
			Teacher Affect	-76
			Instructional Practices	-82

accounts for about 30% of the variance in the climate scores. The loadings for each variable indicate that there are basically three teacher variables involved in this relationship--Time on Behavior, Time on Instruction and Expected Homework. While 30% shared variance is not large enough that these three variables could be considered a major influence on the climate scores, these variables have a strong enough relationship to suggest they are clearly important. This is especially interesting in view of the recent importance that the variable "time on instruction" seems to be assuming as a predictor of cognitive achievement (see, for example, Rosenshine, 1976). This particular analysis also seems to indicate that time on instruction is related to student perceptions of the class.

Of course, from canonical correlations, like other correlations, one cannot be certain of the direction of causality. This study is exploratory in intent and the relationships discovered here need further testing and analysis to determine causality. But, the strength of the relationship is suggestive.

The R-square for the second correlation is half that of the first correlation--.15. Here again, Expected Homework and Time on Behavior are important. This time, however, they both have the same sign. This variate represents teachers who report spending relatively more time on Behavior and who expect relatively more Homework. They also spend more time in preparation. These teacher's classes are seen as being more difficult and have lower scores for most of the positive climate scales. In spite of spending more time in preparation and expecting more homework from the students, these teachers spend more time on behavior and their classes are not viewed as favorably.

These two correlations demonstrate the importance of and show the interactions among a relatively few teacher variables. Four types of classes can be identified from these teacher variables. There are two types of classes in which teachers spend a lot of time on behavior. In one type, the teacher expects relatively less homework and spends less time on instruction. The students in these classes perceive their classes as being more apathetic, dissonant and cliquish. They also see their classes as having less Peer Esteem, less warmth from the teacher and poorer Instructional Practices. In the second type, in addition to spending a lot of time on behavior, the teachers report being better prepared and expecting more homework. The students in these classes perceive their classes negatively, just as the earlier group, but they also find the classes more difficult and feel they have less Decision-making.

The other two types of classes represent the opposites of the previous two types. Classes where teachers spend more time on instruction and expect more homework are perceived positively and those where there is less homework expected and less time in preparation, the classes are again perceived positively but are also seen as being easier.

The R-squares for the junior high analysis are .18 and .16. The junior high schools split time on behavior and instruction into two variates. The first indicates that teachers who expect more homework, spend more time on instruction and spend more time on preparation have classes where the students are more compliant, have more Peer Esteem and less Classroom Dissonance. The classes are also perceived as being less apathetic and as having less Student Decision-making. For this variate, more focus on homework and instruction are related chiefly to student behavior variables rather than those measuring instructional practices or teacher-student interaction.

The same is not true of the second variate. This variate primarily represents the relationship between time on behavior and several climate scales. These scales include some dealing with instructional practices and teacher-student interactions. More time on behavior is related to classes that are seen as more difficult and instructional practices seen as poorer. Teacher affect is also seen as low while favoritism is high. As for the student behavior variables, classes in which more time is spent on behavior have students who are perceived as more apathetic and dissonant, less compliant and with lower Peer Esteem.

It is curious that these two variates do not form a single bipolar one as was the case for the high schools. But for the junior highs, in the classes where the teachers are obviously instructionally focused, the related climate perceptions focus on student behavior. In contrast, in the classes where teachers spend more time on behavior, the classes are seen as possessing less favorable student behavior, instructional practices and teacher-student interactions.

It is also interesting that, at both levels, Task Difficulty is not directly related to expected homework or time on instruction. Instead, the amount of time on behavior seems to influence most directly the students' perceptions of Task Difficulty.

Conclusions (Teacher Variables)

There was a dual purpose in relating the teacher variables to the class climate scores. The first reason for doing so was to help determine what the climate instrument actually measures and the second reason was to help discover more specific variables that covary with the climate scales. Had the teacher variables accounted for a large proportion of the variance in the climate scales, the climate construct would have been called into question--it being considered an alternate measure of teacher characteristics. This, however, was not the case. Of the teacher variables, the teacher demographic subset is the most pertinent to this concern. And, as reported earlier, this subset did not have a canonical correlation that accounted for more than 18% shared variance. The climate instrument, therefore, cannot be considered an alternate measure of teacher characteristics.

Each of the subsets of teacher variables related in some degree to the climate scales, however. This should not be unexpected. The teacher is an important member of the classroom context and it is not too difficult to accept that even a teacher's age or sex might affect the student perceptions of the context. It was within this frame of reference that relationships with specific and possibly manipulable variables were sought. The relationship between specific variables of the two groups have been discussed in the previous section describing each subset of teacher variables. The generalization that can be made, looking across all of these subsets, is that, generally, it is the subset of teacher variables that relate to the climate scores rather than isolated variables within each subset. Teacher sex, age, credential and experience, for example, formed a group that related to several of the climate scales. Younger female teachers with less teaching experience and fewer credentials had classes higher in

Classroom Physical Appearance, Peer Esteem and Student Compliance. And, teachers with educational beliefs favoring more Teacher Control, Basic Subjects and Skills, and less Student Participation, had classes lower in Student Decision-making, Teacher Affect and Classroom Physical Appearance.

Compared to the other subgroups, the variables describing teacher perceptions of classroom practices accounted for more variance and needed fewer variables to establish the relationship. This is true, perhaps, because these variables are the most clearly classroom specific variables. In any case, these variables probably have the most to offer as tangible variables that could be manipulated in an attempt to change class climate scores.

Observation Data and Classroom Climate

The third major section of this study is designed to compare student perceptions of classroom climate to perceptions of the class obtained from trained observers. These two data sources are sufficiently different in both focus and generality that no direct variable by variable comparison is possible. Furthermore, the instruments used to collect the data were neither conceived nor designed with the idea of direct comparison. In addition, the question of which type of data is the most valid has not been resolved. Walberg, for example, feels that perhaps "what is objectively counted or measured should be weighted and justified by what is subjectively perceived" (1976).

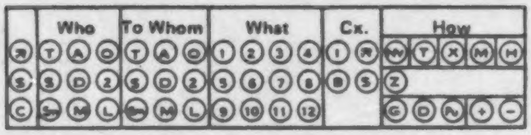
The purpose, then, of this section of the study is not to validate the climate construct by comparing climate responses to observation data, but is intended instead to compare the two data sources in an attempt to discover variables from the observation data that covary with student climate perceptions. The observation instrument focuses on specific and observable classroom events. The climate instrument, in contrast, solicits responses that are more abstract and subjective. Even so (as previously reported) the subjective data obtained by climate instruments do help account for student achievement. The abstractness of the construct, however, makes it difficult to know what to manipulate when attempting to change class climate. *This section of the study is intended to isolate specific variables from the observation data that are related to the climate responses of students and that are manipulable.*

Procedure

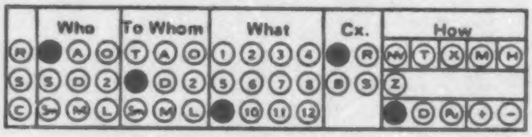
The observation data for this study were collected by trained observers using a modified version of the SRI observation instrument. (For a detailed description of the instrument and a discussion of the modifications made, see Giesen and Sirotnik, 1979.) The instrument is made up, basically, of four parts. The first, the Physical Environment Inventory, records seating and grouping patterns, furnishing, materials and architectural features of the class. The next section, the Classroom Snapshot, records data about what each adult and child in the classroom is doing, the size of the groups of students, and the nature of the activities in progress. This section and the third section, the Five Minute Interaction (FMI), is replicated four times during each observation period. The FMI uses five response categories for the observer: "Who does the action?", "To whom is it directed?", "What is done?", "What is the context?" and "How is it done?" The final section, the Daily Summary, affords an overview of the space and materials available as well as the decision-making process in evidence. At the junior high and high school levels, one full observation consisted of an entire class period. With only a few exceptions, each sampled class was observed three times.

The number of possible code combinations for the instrument is very large--the FMI section alone has nearly 1000 possible combinations. Faced with this abundance of possible variables, it was necessary to limit those used in the analyses. Limiting the variables for this portion of the study followed the same pattern that was used for limiting the teacher variables. The variables obtained from the observation instrument were examined, and those felt to be the ones most logically related to climate scores were chosen. The next step taken to assure a manageable number of variables was to group the variables in several different categories. These categories were chosen based on the organization of the observation instrument. The first category consisted of variables taken from the Physical Environment Inventory, the Daily Summary and the Snapshot portions of the instrument.

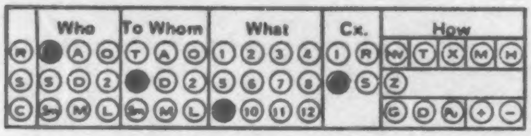
The next two categories were taken from the Five-Minute Interaction section--the first category reflecting "What" was done and the second category reflecting "How" the action was done. This portion of the instrument consisted of a series of FMI frames of the following format.


Who
To Whom
What
Cx.
How

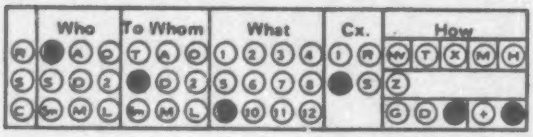
Without belaboring the details, one of these frames would be "bubbled" in on the average of every 5 seconds depicting who was doing what to whom and how and in what context. For example, if the teacher (who) was correcting (what) a student (whom) with guidence (how) during instruction (context), the frame would be bubbled in by the observer as follows.


Who
To Whom
What
Cx.
How

A typical pattern indicating behavioral control is


Who
To Whom
What
Cx.
How

in the case of mild discipline or


Who
To Whom
What
Cx.
How

in the case of a more major punitive action.

The instrument is exceedingly complex (but surprisingly trainable) yielding thousands of potential variables. The reader is strongly advised to consult Giesen and Sirotnik (1979) for a more comprehensive and detailed explanation of the observation system. (A sample observation instrument and a guide to the meaning of the FMI codes can be found in Appendix D).

Analysis

As with the teacher variables, canonical correlation was chosen as the analytic technique to assess the multivariate relationship between the observation variables and the climate scales. While canonical correlation is an appropriate choice for this type of comparison of variables, the nature of the data collected by the Five-Minute Interaction portion of the observation instrument hindered the effectiveness of this or any other multivariate technique. An examination of the FMI data offers impressive evidence of a sort of "sameness" across the classes in our sample. Most of the events that the observation instrument was devised to record occurred with a uniform infrequency. Relatively few classes deviated from this uniformity. This restricted the number of variables that occurred with enough frequency or that had normal enough distributions to be used in the multivariate analyses. To overcome the problems created by the variables that deviated from normal distributions, square root transformations were performed on each of the problematic variables. The transformed variables were then used in the analyses.

Even after performing these transformations, there was still a restricted number of FMI variables that could be used. In fact, there were so few FMI "How" variables remaining that reasonable interpretation of the associations between them and the climate scales would have been impossible. The "How" variables were, therefore, dropped from further analysis.

The number of "who/what/to whom" variables that could be used was substantially reduced. The variables eliminated were mainly those intended to measure classroom affect. The affect variables might reasonably be expected to relate to a number of the climate scales, but these relationships could not be determined because of how infrequently negative or positive affect was observed in the sampled classrooms. The "who/what/to whom" variables that could be used deal mainly with teacher instructional practices, student responses or student initiated interactions.

The first of the categories of variables finally chosen to be used in the analyses consists of portions of the Physical Environment Inventory, the Daily Summary and the Classroom Snapshot. The variables used are the following:

1. The degree of alteration to the Physical Environment (Little, Moderately or Highly altered).
2. Space Rating (Crowded, Adequate, Spacious).
3. Student use of materials and equipment (Restricted, Partially Restricted, Unrestricted).
4. Locus of decision-making (Predominantly Teacher, Predominantly Student).
5. Rank of class at high interest level (1 = 0% to 24%, 2 = 25% to 49%, 3 = 50% to 74%, 4 = 75% to 100%).
6. Variety of instructional activities by observation
7. Variety of grouping by observation
8. Teacher directed activities.*

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* Item 8 represents the relative frequency (%) that these activities occurred summed over all snapshots for each class.

9. Independent of adult--cooperative activity.*

10. Independent of adult--independent activity.*

11. Adult involved in custodial or routine activities.*

12. Explaining, lecturing or reading aloud.*

13. Disscussion.*

14. Work on written assignments.*

15. Taking test or quiz.*

16. Student non-task behavior or teacher social interaction--no assignment.*

17. Student non-task behavior during assignment.*

The other group of observation variables used consists of the FMI "who/what/to whom" variables that occur with enough frequency that it is possible to use them in multivariate analyses. The "who/what/to whom" variables offered the potential of being observed in any one of four contexts: instructional behavioral, social, and routine. The variables that remained for the following analyses are mostly from the instructional context with some from the behavioral context. Since most are instructional, in the discussion that follows all of the variables are instructional unless they are labeled otherwise. The FMI "What" group is made up of the following variables.

1. Direct question--adult to one student.
2. Direct question--adult to two or more students.
3. Instruction/explanation--adult to one student.
4. Instruction/explanation--adult to a small or medium group.
5. Instruction/explanation--adult to a large group.
6. Imperative command--adult to one student.
7. Comments/general action--adult to one student.
8. Acknowledgment--adult to one student.
9. Simple Correction--adult to one student.
10. Correction with guidance--adult to one or more.
11. Monitor Observe--to two or more students.
12. Monitor Observe with movement--adult to one or more students.

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* Items 9 through 17 represent the relative frequency (%) that these activities occurred summed over all snapshots for each class. Items 12 through 17 were, in addition, weighted according to the number of students in the class involved in each activity.

13. Student response
14. Student contributing
15. Student questioning
16. Student response--non-verbal
17. Simple correction--adult to one student (behavior)
18. Simple correction--adult to two or more students (behavior)
19. Adult working alone (behavior)*
20. Adult interacting with other adult (behavior)*
21. Student response (behavior)

Results (Snapshot, Daily Summary and Physical Environment Inventory)

At both the high school and junior high levels there were four canonical correlations that exceeded .30 and were significant to the .01 level. For the high schools the canonical correlations ranged from .61 to .33 (see Table 17) and for the junior high schools the range was from .62 to .41 (see Table 18). The first variate at the high school level relates greater student decision-making and less difficulty to a number of observation variables. The two climate scales are related to more student freedom to use materials and equipment, more student control of decision-making, and a greater variety of grouping patterns. In addition, these scales relate to less work on written assignments, less taking of tests and quizzes, less teacher direction of activities, and less explanation, lecturing or reading aloud. For the second variate more teacher direction of activities, less independent direction of activities, and fewer students being off-task both during an assignment and while there was no assignment relates to a more pleasant physical appearance, greater peer esteem, higher teacher affect, and better instructional practices and less apathy, cliqueness and classroom dissonance. (See Appendix E for univariate summary statistics.) (Zero-order correlations for the observation variables are available from the author on request.)

The third variate indicates that for classes where more students are at a higher interest level and where there is less discussion, students perceive better instructional practices, more competitiveness and more compliance.

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* These items represent the sum over all contexts except instruction.

Table 17

High School Snapshot, Daily Summary and Physical Environment Inventory Variables

High Schools	Observation Variables	Loadings	Climate Scales	Loadings
1st Canonical	Unrestricted Use of Materials	46	Student Decision-Making	89
	Locus of Decision-Making	41	Task Difficulty	-44
.61	Variety of Grouping	39		
	Cooperative Direction	31		
sig.=.000	Work on Written Assignment	35		
	Taking Tests	-38		
	Teacher Direction	-42		
	Explaining, Lecturing	-67		
2nd Canonical	Teacher Direction	42	Classroom Physical Appearance	57
	Work on Written Assignments	-31	Peer Esteem	50
.48	Variety of Grouping	-32	Teacher Affect	35
	Teacher-Custodial, Routine	-33	Instructional Practices	34
sig.=.000	Independent Direction	-42	Student Apathy	-55
	Non-Task, No Assignment	-49	Student Cliqueness	-56
	Non-Task, Assignment	-76	Classroom Dissonance	-64
3rd Canonical	Percent at High Interest	50	Instructional Practices	50
	Discussion	-63	Student Competitiveness	40
.41			Student Compliance	34
sig.=.000				
4th Canonical	Alteration of Environment	60	Student Cliqueness	48
	Cooperative Direction	44	Classroom Physical Appearance	46
.33	Variety of Grouping	35	Task Difficulty	30
	Teacher Direction	-35		
sig.=.000				

Table 18

Junior High School Snapshot, Daily Summary and Physical Environment Inventory Variables

Junior High Schools	Observation Variables	Loadings	Climate Scales	Loadings
1st Canonical	Cooperative Direction	49	Student Decision-Making	77
	Spaciousness	48		
.62	Locus of Decision-Making	47		
	Unrestricted Use of Materials	46		
sig.=.000	Variety of Grouping	37		
	Taking Tests	-38		
	Work on Written Assignments	-49		
	Teacher Direction	-47		
	Explaining, Lecturing	-48		
2nd Canonical	Percent at High Interest	44	Student Compliance	76
	Discussion	43	Instructional Practice	74
.47	Variety of Grouping	31	Peer Esteem	58
	Non-Task, Assignment	-66	Classroom Physical Appearance	44
sig.=.000			Teacher Affect	43
			Student Cliqueness	-39
			Task Difficulty	-41
			Classroom Dissonance	-54
			Student Apathy	-69
3rd Canonical	Percent at High Interest	41	Classroom Dissonance	55
	Variety of Grouping	-37	Student Competitiveness	54
.44	Explaining, Lecturing	-37	Task Difficulty	38
	Discussion	-48	Student Apathy	34
sig.=.000			Student Compliance	-30
			Peer Esteem	-37
			Teacher Affect	-46
4th Canonical	Independent Direction	50	Classroom Physical Appearance	53
	Variety of Activities	44	Student Competitiveness	-45
.41	Degree of Alteration	43		
	Teacher-Custodial, Routine	37		
sig.=.000				

The final variate indicates that classes with more highly altered environments, more cooperative direction of activities, more variety of grouping and less teacher direction of activities are perceived as having more cliqueness, and as being in more pleasent physical surroundings.

At the junior high school level the first variate is nearly identical to the first variate at the high school level. Classes that are perceived as having more student decision-making are viewed by the observers as having more cooperative direction of activities, as being more spacious and as having more student control of decision-making and more freedom in the use of materials. There is also less work on written assignments, less teacher direction of activities and less explaining, lecturing, and reading aloud. The second variate relates classes with a larger percentage of students at high interest, with more discussion and with less non-task activity during an assignment to a number of climate scales. These classes are perceived as having more compliance, better instructional practices, more peer esteem, better physical appearance, and more teacher affect. They are also seen as having less cliqueness, dissonance, and apathy.

The percentage of students at high interest is important in the third variate as well as the second. In this case, classes where more students are at high interest, and where there is less variety of grouping, explaining, lecturing and discussion, the students find the classes to be higher in dissonance, competitiveness, difficulty and apathy, and lower in compliance, peer esteem, and teacher affect. The final junior high variate indicates that, for classes where the students perceive a more pleasant physical appearance and less competitiveness, observers see more independent direction of activities, more variety of activities, a greater degree of alteration to the environment and more teacher time on custodial or routine activities.

Discussion (Snapshot, Daily Summary and Physical Environment Inventory)

The set of observation variables used in the preceding two analyses have a stronger relationship with class climate than do the other sets of variables which have been analyzed. This stronger relationship can be seen in the size of the canonical R-squares. The canonical R-squares for the significant variates (with a canonical R of over .30) at the high schools are .37, .23, .17, and .11. At the junior high schools they are .39, .22, .20, and .17.

At both levels, the first variate accounts for nearly 40% of the shared variance. The variables that load on the first variate are basically the same at both levels. These loadings indicate a number of observation variables that are associated with greater student decision-making. More freedom to use materials, greater variety of grouping, more student control over decision-making, more cooperative direction of activities and less teacher direction are associated with the climate scale measuring student decision-making. Less work on written assignments, fewer tests and quizzes. and less lecturing and explaining are also associated with more decision-making. At the high school level these classes are also seen as being less difficult.

The remaining variates are not the same at the separate levels. The second high school canonical correlation appears to represent classes that could be described as business-like and satisfying. The important observation variables are concerned with students being on-task and with the director of activities. Classes where the students exhibit less non-task behavior (assignment or no assignment) and are more teacher directed and less independent directed are classes which have a more pleasant physical appearance, where the students have more peer esteem and are less apathetic and cliquish and where there is less classroom dissonance. So, these classes are on-task and they are teacher directed, the students feel good about their surroundings, themselves and their teachers, and there is less student misbehavior and apathy.

The third canonical variate indicates that in classes where there is a higher percentage of students at high interest and there is less discussion, the students feel the teacher uses better instructional practices and that there is more student competitiveness and compliance in the classes. It is easy to see that better instructional practices and student compliance could be related to more students at high interest and more competitive classes could be perceived as being at higher interest. The negative relationship between these climate scales and class discussion is less clear. However, the less centralized form of teacher control and direction generally associated with class discussion might explain this relationship. Where the teacher is not the sole focus of attention, the students might feel there is poorer instructional practices and less student compliance.

For the final high school variate, the loadings indicate that in classrooms with more altered environments, a variety of grouping patterns, and more cooperative direction and less teacher direction, there is more student cliquishness and the classrooms have a better physical appearance. The relationship between altered environment and a better physical appearance is understandable. It appears that these classes with altered environments also have more cooperative direction, and less teacher direction and a greater variety of grouping patterns. And, apparently, more grouping options and less centralized direction are associated with more cliquishness among the students.

The second and third canonical variates at the junior high level are interesting because they represent different combinations of the same observation variables that lead to quite different relationships with the climate scales. Both variates describe classes that the observers reported to have a larger percentage of students at high interest. The first of these two variates combine higher student interest with more class discussion, a greater variety of grouping patterns, and less non-task during an assignment. This combination has a positive association with a number of climate scales--for example: more Student Compliance, better Instructional Practices, more Peer Esteem, better Classroom Physical Appearance, more Teacher Affect, less Classroom Cliqueness and less Student Apathy. The second of the two variates combines a higher percentage of students at high interest level with less variety of grouping patterns, less explaining and lecturing and less discussion. This combination of observation variables relates to negative student perceptions of class climate. The specific scales indicate more Classroom Dissonance, more Student Competitiveness, more Task Difficulty, more Student Apathy, less Student Compliance, less Peer Esteem, and less Teacher Affect. So, while the observers saw a larger percentage of students at high interest in both of these types of classes, the students perceived the classes to be nearly opposites. No doubt, the other variables loading with "percent at high interest" help explain the student perceptions, but these results would also lead to the questioning of an observer's accuracy in making inferences about variables such as student interest.

The final junior high variate contains classes that the students perceive as more pleasing in physical appearance and less competitive. The observers see these classes as having more independent direction, a greater variety of activities, and a greater degree of alteration of the environment.

It seems consistent that an altered environment, greater variety of activities and more independent direction of activities would be perceived as bettering the physical appearance of a classroom and as resulting in less competition among students. This variate brings to mind classes with different learning stations and with flexibility in the use of these stations.

As alluded to earlier, a comparison of the two levels for these analyses reveals that the groups are essentially the same for the first variate, but differ on the remaining three. Within the remaining variates at the high school level the classes that appear to be viewed most positively are those that are teacher directed and business-like. At the junior high school level, the classes viewed most positively also seem to be on-task. They are, in addition, associated with more class discussions and a greater variety of grouping.

Results (FMI "Who/What/To Whom" Variables)

Of the analyses computed for this study, the following analyses--using the observation "who/what/to whom" variables--display the strongest relationships between the predictor variables and the climate scales. This is so in spite of the fact that numerous of the "who/what/to whom" variables that might have been expected to be most strongly related to classroom climate occurred with such a low frequency that they were excluded from these multivariate analyses. The largest canonical correlations between the remaining FMI "who/what/to whom" variables and the climate scales, for example, was .67 at the high schools (see Table 19 for the canonical correlations and the variable loadings) and .63 at the junior high schools (see Table 20). At the high school level, there were six canonical correlations that were significant to at least the .01 level and that had a canonical R of .30 or above, and at the junior high school level there were four.

Table 19
High School FMI Variables

High Schools	Observation Variables	Loadings	Climate Scales	Loadings
1st Canonical	Instruction, one student	38	Student Decision-Making	82
	Adult interacting with adult(Beh)	38	Classroom Dissonance	35
.67	Imperative Command, one student	37	Instructional Practices	31
	Instruction, small/med. group	31	Task Difficulty	-51
sig.=.000	Acknowledgment, one student	-47		
	Instruction, large group	-69		
	Direct Question, two or more	-74		
2nd Canonical	Student Questioning	35	Teacher Affect	51
	Instruction, one student	33	Student Decision-Making	50
.57	Student Response, Nonverbal	-43	Classroom Physical Appearance	34
	Simple Correction, one stu(Beh)	-56	Peer Esteem	32
sig.=.000	Student Response (Beh)	-60	Student Apathy	-48
	Simple Correction,2 or more(Beh)	-61	Classroom Dissonance	-50
3rd Canonical	Student Response (Beh)	58	Classroom Dissonance	64
	Simple Correction, one stu(Beh)	55	Student Apathy	59
.50	Student Contributing	50	Student Cliqueness	42
	Student Questioning	48	Task Difficulty	33
sig.=.000	Simple Correction,2 or more(Beh)	36	Student Compliance	-35
			Peer Esteem	-42
			Classroom Physical Appearance	-47
			Instructional Practices	-50
4th Canonical	Adult interacting with adult (Beh)	39	Student Cliqueness	84
	Monitor/Observe with Movement	36	Teacher Favoritism	43
.37	Correction with Guidance	35		
	Student Response	-33		
sig.=.000	Direct Question, two or more	-46		
5th Canonical	Instruction, small/med. group	41	Peer Esteem	60
	Student Response	40	Instructional Practices	36
.32	Student Questioning	35	Student Compliance	35
	Direct Question, two or more	33	Classroom Physical Appearance	31
sig.=.000	Instruction, large group	-31		
6th Canonical	Simple Correction, one stu(Beh)	-32	Teacher Affect	48
	Instruction, one student	-37	Student Compliance	41
.30	Simple Correction, one student	-38	Peer Esteem	38
			Task Difficulty	-48
sig.=.000				

Table 20
Junior High School FMI Variables

Junior High Schools	Observation Variables	Loadings	Climate Scales	Loadings
1st Canonical	Instruction, small/med. group	44	Student Apathy	61
	Monitor/Observe with Movement	39	Classroom Dissonance	56
.63	Student Response	-33	Student Decision-Making	56
	Student Questioning	-38	Student Competitiveness	39
sig.=.000	Acknowledgment, one student	-56	Teacher Favoritism	32
	Direct Questions, two or more	-65	Student Compliance	-45
			Teacher Affect	-48
2nd Canonical	Adult interacting with adult(Beh)	30	Student Decision-Making	43
	Student Response, Nonverbal	-33	Classroom Dissonance	-34
.51	Direct Question, one student	-35	Student Competitiveness	-39
	Imperative Command, one student	-45		
sig.=.000	Student Response	-46		
3rd Canonical	Student Response, Nonverbal	41	Instructional Practices	79
	Instruction, small/med. group	35	Teacher Affect	61
.48	Simple Correction, two or more		Student Compliance	59
	students(Beh)	-31	Peer Esteem	58
sig.=.000	Student Response(Beh)	-43	Classroom Physical Appearance	39
	Simple Correction, one stu.(Beh)	-60	Teacher Favoritism	-41
			Student Apathy	-49
			Task Difficulty	-70
4th Canonical	Instruction, to a large group	40	Student Cliqueness	40
	Simple Correction, two or more		Student Apathy	38
.43	students(Beh)	36	Teacher Favoritism	-38
	Student Response	-32	Student Competitiveness	-54
sig.=.000	Imperative Command, one student	-48		
	Simple Correction, one student	-51		

The first of the high school canonical variates concerns classes perceived as higher in Student Decision-Making and lower in Task Difficulty. The observation variables related to these scales are more instruction to one student, more adult to adult interactions, more imperative commands to one student, less acknowledgment to one student, less large group instruction and less direct questions to two or more students.

The second variate relates positive perceptions of the class to several observation variables. They are more student questioning and instruction to one student and fewer nonverbal student responses, fewer simple corrections of one, or two or more students' behavior, and fewer student responses in the behavior context. Variate number three relates negative perceptions of the class to the observation variables. More student responses (behavior), more simple correction to one, two or more students (behavior) more students contributing and more student questions occur in classes perceived negatively.

The fourth variate identifies classes perceived as high in cliquishness and teacher favoritism. These are classes with more adult to adult interaction, more teacher monitoring and observing while moving, more correction with guidance, less student response and less direct questioning of two or more students. Higher Peer Esteem is the main identifying scale of the fifth variate. Higher Peer Esteem is related to more instruction to small and medium groups, more student responding, more student questioning, more direct questions to two or more students and less instruction to large groups.

The last of the high school variates relates less simple correction of one student (behavior), less instruction to one student and less simple correction to one student (behavior) to more Teacher Affect, more Student Compliance, more Peer Esteem and less Task Difficulty.

At the junior high school level the first of the four canonical variates represents classes that are largely viewed negatively (see Table 20). The main exception is that these classes are also seen as having more Student Decision-Making. The observation variables relating to this combination of scales are: more instruction to small and medium groups, more monitoring/observing with movement, less student response, less student questioning, less acknowledgment of one student and fewer direct questions. For the second variate more Student Decision-Making, less Classroom Dissonance, and less Student Competitiveness relate to the following variables: more adult interacting with adult, less student nonverbal response, fewer direct questions to one student, fewer imperative commands to one student, and less student response.

The third variate represents classes the students perceive positively on several scales. These positive perceptions relate to more student nonverbal response, more instruction to small and medium groups, fewer simple correction of two or more students (behavior), less student response (behavior) and fewer simple corrections of one student (behavior). The final variate makes an association between classes seen as being more cliquish and apathetic, and less competitive and as having less teacher favoritism and the observation variables that follow: more instruction to one student, more simple correction of two or more students (behavior), less student response, fewer imperative commands to one student, and fewer simple corrections to one student.

Discussion (FMI "Who/What/To Whom" Variables)

At the high school level the canonical R-squares for the relationship between the FMI "who/what/to whom" variables and the climate scales are .45,.33, .25,.13,.11,.09 and for the junior high school level they are .39, .26, .23, .18.

On the basis of these values, it is clear that the relationship between these groups of variables is the strongest of the groups analyzed in this study. While the R-squares are still not large in an absolute sense, they do indicate that separate sets of these few specific variables taken from the observation data account for up to 45% of the variance shared with the student perceptions of class climate.

The R-square of .45 represents the first variate at the high school level. This variate describes classes in which the students perceive more freedom to make decisions. They also find these classes to be less difficult. The observation variables which are associated with these two scales suggest instructional grouping practices. Greater student freedom to make decisions and less task difficulty appear to characterize classes in which instruction is focused on individual students or groups of students rather than on the total class. The positive loading of the "adult interacting with adult" variable seems to suggest that more of these classes have a teacher's aide.

The second variate is one that describes classes seen as having more positive Teacher Affect and less Student Apathy and Classroom Dissonance. Student Decision-Making also loads on this variate. The unifying element among the observation variables loading on this variate seems to be whether the context of the variable is instructional or behavioral. The variables whose context is instructional have positive loadings and those whose context is behavioral have negative loadings. Therefore, classes in which instruction is taking place and students are not being corrected or responding about their behavior have a positive climate.

The third variate represents classes viewed as having negative climates. It is a little puzzling that variates two and three did not form a single more powerful variate since they involve many of the same variables. The signs, however, change. This variate describes classes higher in Classroom Dissonance, Student Apathy and Student Cliqueness and lower in Peer Esteem, Classroom Physical Appearance and Instructional Practices. It is again, to a large degree, more students being corrected or responding in the behavior context which relates to these climate scales. In addition, more Student Contributing and more Student Questioning load on this variate. While the second and third variates are quite similar, they do differ in some apparently important respects. First of all, the scales Student Cliqueness and Task Difficulty load with Classroom Dissonance and Student Apathy on the third variate and Instructional Practices replaces Teacher Affect and Student Decision-Making on the opposite end of the loadings. Among the observation variables, Student Questioning loads with the behavior variables on the third variate. And, the third variate mainly represents what students are doing. The only teacher variables are the two "Simple Correction" variables. While the evidence presented by these two variates is not conclusive, it seems that the second represents classes in which instruction is taking place but the techniques of instruction are not a salient feature, while the warmth of the teacher is. The lower instances of the teacher dealing with behavior is related to this warmth. For the third variate it appears that the instructional practices are salient but not the students' relationship with the teacher. The third variate represents classes where the teacher is seen as less effective and the students are seen as more disruptive. One variate contrasts classes where teachers offer more warmth and allow more student freedom to make decisions versus those that do not, and the other contrasts classes where the teachers have better instructional practices and the students are less cliquish versus the opposite. Both types of classes are seen by observers to be related to variables in the behavior context.

The fourth variate represents classes wherein there is more Student Cliqueness and more Teacher Favoritism. There is more adult to adult interaction in these classes (which indicates the presence of a teacher's aide or other adult), there is more teacher monitoring students (while the teacher is moving around the room) and there are fewer direct questions to more than one student. Like the first variate, these classes seem more likely to have an aide and seem to have less whole group activity. The teachers seem to be interacting with another adult in the room or monitoring the class while moving about. This lack of central focus on a teacher might help explain the higher scores on Student Cliqueness. And, the monitoring observing and correction with guidance given to these classes must be perceived as being focused unequally on some of the students in the classes since the teacher is seen as showing favoritism.

The fifth canonical variate represents classes characterized mainly by being perceived as containing higher Peer Esteem. The observation variables offer evidence that these, again, are classes not as much involved in total group activities. The variables loading positively with Peer Esteem are all from the instructional context and give the impression of classes productively involved in the educative process. The instruction is to small and medium groups and is characterized by both the teacher and students asking questions and the students responding.

While each analysis might have a number of statistically significant canonical correlations, there are probably fewer in each analysis that are meaningful as well. After the first two, three, or four variates they become increasingly difficult to interpret and may be doing no more than responding to systematic error. The actual zero-order correlations between the variables being related might be nearly negligable. This is, no doubt, the case for the sixth variate. It contains many of the same variables that were found in the second and third variates but it is difficult to judge why this combination of the variables separated into another variate. Here again, though, the two "Simple Correction" variables in the behavior context have a negative relationship with several of the positive climate scales.

The first of the junior high school variates describes classes that are perceived more negatively. But these classes do permit more freedom of student decision-making. The observation variables that load with these climate scales create a picture of a class where the instruction is directed at a smaller than total class group but where there is little interaction between teacher and students. The teacher gives more instruction and monitors more but ask fewer direct questions and acknowledges the students less. The students, in turn, ask fewer questions and respond less to the teacher.

The second variate, again, describes classes with more Student Decision-Making. However, for this variate these classes are also seen to be lower in Classroom Dissonance and Student Competitiveness. Just as with the first junior high school variate, this variate appears to describe classes with little teacher/student interaction. In this case, however, this lack of interaction is not associated with negative perceptions of the class. In fact, there is less Classroom Dissonance in these classes. In addition to little evidence of teacher/student interaction, these classes also have more adult to adult interactions. This, again, points to the presence of an aide in the classes. Since there is less teacher/student interaction, more adult/adult interaction, more student decision-making and less competitiveness, this variate may represent classes where students are working without much teacher direction and are involved in activities over which they have some choice.

The third of the variates describes classes that the students perceive positively on a number of scales. These are also classes seen as being less difficult. The main characteristics of these classes as seen by the observers are that there is less correction relating to behavior and less student response relating to behavior. It is clear why there is a negative relationship between the behavior variables and positive perceptions of the climate, but it is not clear why these classes are also perceived as being less difficult.

The fourth and final variate is rather difficult to interpret. Four climate scales that are generally regarded as being negative split direction on this variate--two being positive and two being negative. These, then, are classes seen as being more cliquish and apathetic and less competitive. They are also seen as having less teacher favoritism. The main difference between the observation variables that load on this variate is that those that load positively are concerned with large groupings of students and those that load negatively are concerned with single students. However, the loading pattern for this variate does not lend itself to a clear substantive interpretation.

The analyses of the FMI "who/what/to whom" variables and climate scales show less similarity between levels of schooling than most of the earlier groups of variables and at the same time account for more of the variance shared with climate than do the other groups. While single observation variables do not stand out as explaining this variance, particular groupings do. Perhaps the group of observation variables that most consistently appears to relate to the climate scales is a group of three variables from the behavior context--student response (behavior), simple correction, one student (behavior), and simple correction, two or more students (behavior). Positive loadings for these variables are consistently associated with negative perceptions of the class climate--and visa versa--for both levels.

The size of the group of students involved in an activity also seems to relate to climate scores. The nature of the relationships, however, is not consistent across the two levels. The specific examples within each level have already been discussed.

Conclusions (Observation Variables)

Both groups of observation variables proved to be more highly related to the climate scales than did the other variable subsets selected for analysis. As a group, these variables accounted for more class climate variance than the other groups of variables in spite of the fact that a large number of observation variables had to be excluded from the analyses because of the infrequency of their occurrence. Unfortunately, the observation variables measuring the level of affect in the classes were among those eliminated because of infrequency. Since the affective interactions in the classroom could not be compared to classroom climate using the type of analysis employed here, the relationship between observation data and climate was, no doubt, lessened. It should be pointed out that the infrequency of affective interactions could, inpart, be the result of the way the data were collected. The observers were trained to code an interaction as positive or negative, only when the interaction was overtly positive or negative. But this fact does not adequately explain the consistently non-affective atmosphere in the sampled classes. The observers simply detected very little affect in these classes. But, even though the instances of observed affect were too infrequent to use in these analyses, it can be assumed that the student perceivers are very sensitive to even infrequent displays of affect and that the infrequent affect can, and no doubt did, influence student responses to climate scales.

The absence of affective variables from the observation data probably also helps explain why the first--and, therefore, most important--variate in these analyses related observation variables to the amount of student decision-making instead of the more affective climate scales. Variables concerned with who directs the activities, the size of groups and, to some extent, the type of activity influence the amount of perceived freedom students have to make decisions. The variates in each analysis following the first one, however, generally make associations between different negative or positive climate scales and the observation variables. To summarize across these variates over all of the observation variables, it seems that the characteristics of the classes perceived positively can be described as being focused on instruction and not behavior, as being on-task and as having a variety of grouping patterns.

Summary

The purpose of this study has been to examine the viability of class climate constructs. To achieve this purpose we sought first to more clearly delineate the domains measured by classroom climate and second, to identify concrete and manipulable variables that covaried with climate scales and consequently would be likely variables to influence in an attempt to change classroom climate. This was accomplished by testing the association between the climate scores on one side and numerous variables from several domains on the other side--variables that seemed likely to covary with the climate scores.

In the first examination of relationships, the climate scales were intercorrelated with other class specific items responded to by the same students. It was confirmed that the closer the conceptual relationship between the single item class specific variables and the separate climate scales the higher the intercorrelations between them. The consistency and strength of the relationship between the two groups was taken as evidence of convergent validity. Substantively, this analysis indicated that the classes the students found interesting were classes which they perceived as better organized and clearer and in which they were more satisfied and not as apathetic. It is somewhat perplexing that the more interesting classes were also seen as being easier and the boring classes as more difficult. Along the same lines, it was surprising to discover that when asked directly how easy or difficult their classes were, the second strongest association at the high school level and the strongest of the junior high schools was with the Student Decision-Making climate scales. Classes where students have more freedom to choose and make decisions are seen as easier and visa-versa.

This could mean that when students are free to choose their activities or subject matter they will select ones that are easy and non-challenging, or that when the teacher offers a variety of means to get to a learning goal and when the student can select from options, the task is easier.

The next section of the study examined the relationship between individual characteristics of the student respondents and their class climate scores. The individual characteristics chosen were SES, race/ethnicity and sex. First of all, we found almost no relationship between student SES and the climate scores. There was more of a relationship between race/ethnicity and the climate scores, but the differences were still modest. In those scales showing differences, whether in the Hispanic or Black subsample, the minority students were more positive in their feelings about their classes. They did, however, find their classes slightly more difficult than did the Anglos. The fact that in classes containing a fairly equal mix of minority and Anglo students, the minority students viewed the classes more positively is surprising when viewed in conjunction with two other relationships found in the literature. First, minority students generally score lower on educational outcome measures and, second, climate scores have been found to predict educational outcome--more positive climate scores predicting higher scores on the outcome measures. The difference between the results of this analysis and what one would expect based on the findings of other studies might be clarified through additional research.

The student background characteristic that most distinguished between students was gender. Again, this analysis was based on classes with a fairly equal number of males and females. The group mean for the two sexes was compared on a class by class basis and although the differences in the group means was not large, they were statistically different for 15 of the 18 climate scales. Only Teacher Clarity, Student Satisfaction and Classroom

Physical Appearance failed to show group differences. For the remaining scales the female students scored highest on most of the scales that could be considered positive and the males scored highest on most that could be considered negative. Whether this represents the way the two sexes were socialized into thinking about school or a difference in the way the groups are treated at school, the differences in perception between the two groups could have some real consequences in view of climate perceptions relationship to outcome measures.

The next section of the study related several groups of variables taken from the teacher questionnaire--ranging from teacher demographics to teacher descriptions of the specific class--to the climate scores for their classes. There was some relationship to be found between each group of teacher variables and the climate scores. The variables which could be considered as measuring teacher background characteristics grouped in different combinations that had canonical correlations as high as .43. But, this represents no more than 18% shared variance between the two groups. When teacher perceptions of their individual classes were compared to the climate scores, the highest canonical correlation was .55 representing 30% shared variance. The main substantive trends from the analyses relating climate scores to teacher variables are, first, regarding the teacher's background and beliefs, positive climate perceptions are related to younger teachers and to less of a degree to female teachers. Teachers with an educational belief in teacher control have classes with less student freedom and decision-making. These classes are also perceived negatively by the students. And, importantly, teachers who feel satisfied with various aspects of their career and school have classes that are perceived more positively by the students. Next, in regard to teacher description of their classes, teachers reporting that they spend more time on instruction and less on behavior have classes that are perceived favorably on a number of climate scales.

The final section of the study related the climate scales to descriptions of the classes obtained from trained observers. This section of the study discovered the strongest relationships between groupings of variables and climate scales. The strongest canonical R for the section is .67 and this accounts for 45% of the variance in the climate scores. The main substantive trends from these analyses offer evidence that variety of grouping patterns and less centralized control is associated with students perceiving more freedom of decision-making. More importantly, trained observers' perceptions of the degree to which the students are on-task and the amount of time spent on instruction versus that spent on behavior is associated with the score of climate scales. Classes where students are on-task and where more time is spent on instruction and less on behavior are viewed more positively on a range of climate scales.

To conclude, the several sections of this study suggest two main points. First, climate scores are sensitive to variation from several domains. The background of the students, the background and beliefs of the teachers, and the conditions within the classroom as recorded by observers all affect the climate of the class. While the climate construct might be criticised because of its being influenced from so many sources, this does not seem to be inconsistent with the way the construct is conceptualized. The climate construct is intended to measure the "atmosphere," "personality" or "context" of the class. Certainly, a student's race/ethnicity and sex, and a teacher's age, sex, attitudes and beliefs are part of the classroom personality or context and there is no reason why these variables should not affect class climate scores. If, however, these variables were to account for much of the variance in the climate scores the construct would certainly be questionable. But as already indicated, these groupings of variables accounted for at most 18% of the variance in the climate scores and cannot be considered a threat to the construct's validity.

This brings up the second major point. In the analyses completed for this study, it is clearly the variables most proximate to the classroom that account for the largest portion of the variance in the climate scores. The observation variables, obviously, are the most closely connected to classroom occurrences and it is these variables that account for the largest portion of variance in the climate scores. Additional evidence of the relative strength of the variables proximate to the classroom is offered by the teacher variables. The teacher perceptions of classroom occurrences, again, are more closely related to the climate scores--significantly more so than the teacher background or belief variables. To summarize these two important points, the evidence from this study indicates that the climate construct is affected by a wide range of variables that merge together in the classroom context and that the construct is most affected by the variables most proximate to the classroom. This is entirely consistent with the way the construct is conceptualized.

While the analyses of this study help clarify the domains measured by classroom climate, the search for concrete and manipulable variables that strongly influence class climate has been less successful. A broad range of variables were related to the climate scores in the analyses performed for this study, but when taken alone, single variables do not account for an impressive portion of the variance in class climate. Perhaps this is more evidence of what the univariate research of the past decades has been telling us with their frequent inability to establish significant results. The complexity of the classroom environment, in and of itself, is an argument used to explain the need for climate type measures, so one should not be too surprised by the relative weak relationship between single variables and the climate scales. Combinations of variables, in contrast, did relate to class climate in significant and meaningful ways. Most impressive is the relationship between variables measuring time spent on instruction or behavior. Regardless of data source and whether the data were collected from participants or observers, there was a consistent and important relationship between these variables and classroom climate. Numerous other variables grouped together in clusters that had significant and meaningful relationships with the climate scores.

To be sure, the variables used in this study did not explain the total amount of variance in the climate scores. While we were as comprehensive as possible, the variables available and useable in these analyses came nowhere near accounting for all possible sources of influence on class climate. For example, the effect of negative and positive teacher interactions could not be determined but these interactions would certainly help explain climate scores. Further work is needed to estimate the association of these and other conceivably important variables with class climate.

Nonetheless, evidence from this study helps define the source and estimate the magnitude of a considerable portion of the variance in class climate. This evidence suggests that the climate construct does measure occurrences that are specific to the classroom context. Since the climate instruments are sensitive to numerous classroom inputs and since climate scores are predictive of cognitive and affective outcomes, research using the construct should be encouraged. Of particular interest would be experimental attempts which result in improved perceptions of the classroom climate--experiments, for example, that would manipulate some of the groups of variables identified as part of this study. Such experimentation conceivably could improve student perceptions of the classroom climate which, in turn, could influence affective and cognitive outcomes. In any case, the data from this study support the viability of climate constructs as measures which reflect important classroom differences.

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APPENDIX A

Classroom Learning Environment
Secondary Students

APPENDIX A

CLASSROOM LEARNING ENVIRONMENT
SECONDARY STUDENTS

1. Teacher Concern (8)

    1. The teacher makes this class enjoyable for me.
    4. The teacher listens to me.
    13. The teacher lets me express my feelings.
    14. I like the teacher in this class.
    -17. I wish I had a different teacher for this class.
    21. I feel the teacher is honest with me.
    22. This teacher is friendly.
    24. The teacher is fair to me.

2. Teacher Punitiveness (6)

    2. The teacher makes fun of some students.
    6. This teacher hurts my feelings.
    7. I'm afraid of this teacher.
    9. The teacher punishes me unfairly.
    11. The teacher makes fun of me.
    16. The teacher gets mad when I ask a question.

3. Teacher Authoritarianism (8)

    19. This teacher is too strict.
    45. This teacher treats us like children.
    49. This teacher will never admit when he/she is wrong.
    56. We don't feel like we have any freedom in this class.
    64. This teacher acts like he/she is better than we are.
    69. This teacher "talks down" to us.
    75. This teacher never changes his/her mind about anything.
    82. I don't feel like I have any freedom in this class.

4. Teacher Favoritism (3)

    47. The teacher likes some students in this class better than others.
    -50. The teacher has no favorites in this class.
    77. The teacher treats smart students in this class better than others.

5. Teacher Enthusiasm (3)

38. This teacher seems to like being a teacher.
51. This teacher seems to enjoy what he/she is teaching.
-60. The teacher seems bored in this classroom.

6. Peer Esteem (7)

3. I help my classmates with their work.
8. If I am absent, my classmates help me to catch up on what I missed.
10. I like my classmates.
12. I like working with other students in this class.
15. In this class, people care about me.
18. If I had trouble with my work, most of my classmates would help me.
20. My classmates like me.

7. Student Decision-Making (8)

32. We are free to talk in this class about anything we want.
35. Students help make the rules for this class.
37. We are free to work with anyone we want to in this class.
40. We can decide what we want to learn in this class.
74. Students help decide what we do in this class.
80. Different students can do different things in this class.
91. Sometimes I can study or do things I am interested in even if they are different from what other students are studying or doing.
97. I help decide what I do in this class.

8. Classroom Dissonance (3)

41. The students in this class fight with each other.
54. The students in this class argue with each other.
107. Students in this class yell at each other.

9. Student Competitiveness (4)

48. There is a lot of competition in this class.
65. In this class, students compete with each other for good grades.
86. When I'm in this class, I feel I have to do better than other students.
90. Students in this class feel they have to do better than each other.

10. Student Cliqueness (3)

36. Some groups of students refuse to mix with the rest of the class.
68. Certain students stick together in small groups.
105. When we work in small groups, many students work only with their close friends.

11. Teacher Clarity (4)

62. The teacher uses words I can understand.
63. The teacher gives clear directions.
95. The students understand what the teacher is talking about.
109. I understand what the teacher is talking about.

12. Student Satisfaction (4)

96. Students feel good about what happens in class.
-101. I don't like coming to this class.
108. After class, I usually have a sense of satisfaction.
112. I feel good about what happens in this class.

13. Student Compliance (4)

53. I usually do my homework.
87. I usually do the work assigned in this class.
94. The students in this class usually do the work assigned.
104. I usually do everything my teacher tells me to do.

14. Student Apathy (4)

29. Failing in this class would not bother most of the students.
-33. Most of the students pay attention to the teacher.
34. Students don't care about what goes on in this class.
67. I don't care about what goes on in this class.

15. Classroom Physical Appearance (2)

70. The room is bright and comfortable.
111. I like the way this classroom looks.

16. Instructional Practices: Knowledge of Results (4)

30. The teacher tells us how to correct the mistakes in our work.
42. The teacher tells me how to correct the mistakes in my work.
43. This teacher lets us know when we have not learned something well.
61. We know when we have learned things correctly.

17. Instructional Practices: Task Difficulty (4)

44. I do not have enough time to do my work for this class.
66. Some of the things the teacher wants us to learn are just to hard.
73. I have trouble reading the books and other materials in this class.
92. The teacher gives me too much work to do in this class.

18. Instructional Practices: Organization (11)

28. We know exactly what we have to get done in this class.
52. We know why the things we are learning in this class are important.
57. The grades or marks I get in this class help me to learn better.
-58. We don't know what the teacher is trying to get us to learn in this class.
-72. Many students don't know what they're supposed to be doing during class.
-76. This class is disorganized.
-78. The grades or marks I get in this class have nothing to do with what I really know.
-79. We have to learn things without knowing why.
93. Students know the goals of this class.
106. Things are well planned in this class.
113. Our teacher gives us good reasons for learning in this class.

APPENDIX B

Educational Belief and Job Satisfaction Scales

"EDUCATIONAL BELIEFS" ITEMS

Teacher Discipline and Control (7) (TCONTROL)

1. Good teacher-student relations are enhanced when it is clear that the teacher, not the students, is in charge of classroom activities.
-5. There is too great an emphasis on keeping order in most classrooms.
8. An orderly classroom is the major prerequisite to effective learning.
11. Students must be kept busy or they soon get into trouble.
16. Students need and should have more supervision than they usually get.
18. In the interest of good discipline, students who repeatedly disrupt the class must be firmly punished.
20. Proper control of a class is amply demonstrated when the students work quietly while the teacher is out of the room.

Basic Subjects and Skills Emphasis (3) (BASICS)

6. Learning is essentially a process of increasing one's store of information about the various basic fields of knowledge.
17. Before students are encouraged to exercise independent thoughts they should be thoroughly grounded in facts and knowledge about basic subjects.
19. The teaching of basic skills and subject matter is the most important function of the school.

Student Concern (2) (STUDCON)

4. Learning is enhanced when teachers praise generously the accomplishments of individual students.
7. The best learning atmosphere is created when the teacher takes an active interest in the problems and affairs of students.

Student Participation (5) (STUDPART)

10. Student initiation and participation in planning classroom activities are essential to the maintenance of an effective classroom atmosphere.
12. When students are allowed to participate in the choice of activities, discipline problems are generally averted.
13. When given a choice of activities, most students select what is best for them.
15. Student motivation is greatest when students can gauge their own progress rather than depending on regular evaluation by the teacher.
21. Students are motivated to do better work when they feel free to move around the room while class is in session.

- = Reflect

RESPONSE MODE: Strongly Agree, Moderately Agree, Mildly Agree,
Mildly Disagree, Moderately Disagree, Strongly Disagree

Note: Items 2, 3, 9, and 14 were deleted.

Staff Job Satisfaction (6)

45. Most People who are teaching in this school find their job rewarding in other than monetary ways.
65. Staff members are proud to be working in this school.
-76. The morale of staff members is rather low.
83. I usually look forward to each working day at this school.
84. Conditions in this school motivate staff members to work hard.
-98. In general, it is a waste of time for me to try to do my very best.

APPENDIX C

Univariate Summary Statistics and Variable Codes for Teacher/Climate Variables

Variable Codes for Teacher/Climate Variables

Variable Code	Variable
TEACHER	Teacher Concern, Teacher Punitiveness, Teacher Authoritarianism, and Teacher Enthusiasm
ORDERLY	Teacher Clarity, Knowledge of Results and Organization
IFAVORIT	Teacher Favoritism
PEEREST	Peer Esteem
STUDDM	Student Decision-Making
CLASSDIS	Classroom Dissonance
SCOMPET	Student Competitiveness
SCLIQUE	Student Cliqueness
SCOMPLI	Student Compliance
SAPATHY	Student Apathy
CLASSPA	Classroom Physical Appearance
TASKDIF	Task Difficulty
TA1	Teacher age (scored 18 to 75)
TA2	Teacher sex (male, female)
TA9	Which one of the following categories best describes your racial/ethnic background (white/causasion/anglo, all others)
TA11	What is your approximate income (include your spouse's income if married) (less than \$5,000, \$5,000 to \$9,999, \$10,000 to \$14,999, \$15,000 to \$19,999, \$20,000 to \$24,999, \$25,000 or more)

TA14	What is the highest academic credential that you hold? (High school, Associate degree/Vocational certificate, Bachelor's degree, Master's degree, Graduate/Professional degree--Ph.D., Ed.D., J.D., M.D., etc.)
TA35	How many years of teaching experience have you had? (1 to 60)
TCONTROL	Teacher Discipline and Control. A scale composed of items measuring the degree to which teachers believe that strong discipline and tight control is necessary in the classroom.
BASICS	Basic Subjects and Skills Emphasis. A scale measuring the teachers opinion of the importance of basic skills and subjects.
STUDCON	Student Concern. A scale measuring the teachers opinion of the importance of personal contact with students.
STUDPART	Student Participation. Measures whether teachers feel students should participate in deciding about various classroom options.
TINT, TPER and TVOC	These three scales measure which of three functions of schooling teachers believe should be most emphasized at the school: 5. Intellectual Development, 6. Personal Development, or 7. Vocational Development.
TA32	Looking back on your expectations before you stated your present career, were those expectations fulfilled? (Yes or no).
TA33	If you had it to do all over again, would you choose education as a profession? (Yes or no).
TB22	How much control do you have overall in how you carry our your job? (None, little, some, a lot, complete).
TB23	Is the amount of control that you have over your job: less than you like to have, about the amount you like to have?
TD11	Students are often given grades A, B, C, D, and FAIL to describe the quality of their work. If schools could be graded in the same way, what grade would you give this school? (FAIL, D, C, B, A)
HELP	How much help do you feel you have in carrying out your job? (Not enough, adequate).
S-JOBSAT	Job Satisfaction. This scale measures the teachers's general satisfaction with his/her job.
TD58	Approximately how much time do you usually spend per week planning and preparing materials for this class? (0-1 hour, 2-3 hours, 4-6 hours, 7-10 hours, 11-15 hours, 16 or more).

	On the average, approximately what percentage of class time is spent on each of the following:
TD61	Instruction (0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%).
TD62	Getting students to behave (same as above)
TD63	Approximately, how much time do you expect students in this class to spend on homework each day for this class? (None, about a half an hour, about one hour, about two hours, more than two hours).
TREL	Relevance of class content. (Combines two items asking how useful the teacher expects it to be later in the students' lives--very useless, somewhat useless, somewhat useful, very useful).

Univariate Summary Statistics:
High School Climate Scales and Teacher Variables

```
                                STANDARD       SMALLEST        LARGEST
VARIABLE             MEAN      DEVIATION          VALUE          VALUE   SKEWNESS   KURTOSIS

TEACHER           3.30450        0.29885        2.30500        3.92250      -0.58       0.17
ORDERLY           3.06760        0.30823        1.96000        3.84333      -0.42       0.13
TFAVORIT          2.22871        0.37993        1.00000        3.47000       0.26       0.04
PEEREST           3.02068        0.23305        2.32000        3.61000      -0.13      -0.14
STUDDM            2.30975        0.37092        1.58000        3.48000       0.46      -0.17
CLASSDIS          1.90955        0.44590        1.00000        3.40000       0.49      -0.23
SCOMPET           2.31937        0.31740        1.31000        3.59000       0.39       0.96
SCLIQUE           2.65053        0.34109        1.42000        3.46000      -0.33      -0.09
SCOMPLI           3.23869        0.27084        2.25000        4.00000      -0.31       0.14
SAPATHY           1.93625        0.37003        1.02000        2.97000       0.30      -0.17
CLASSPA           2.66647        0.46654        1.35000        3.88000      -0.07      -0.40
TASKDIF           2.01904        0.31948        1.14000        2.89000       0.17      -0.31
TA1              36.25189       10.74695       21.00000       70.00000       0.79      -0.22
TA2               1.42317        0.49465        1.00000        2.00000       0.31      -1.90
TA9               1.11839        0.32347        1.00000        2.00000       2.35       3.55
TA11              4.41310        1.30872        2.00000        6.00000      -0.23      -1.18
TA14              3.46851        0.57922        1.00000        5.00000       0.39       0.36
TA35             10.77834        7.87056        1.00000       42.00000       0.86       0.27
TCONTROL          4.41320        0.77396        2.00000        6.00000      -0.42      -0.16
BASICS            4.16327        1.05889        1.00000        6.00000      -0.50      -0.23
STUDCON           5.21788        0.73410        2.00000        6.00000      -1.02       1.36
STUDPART          3.75201        0.84761        1.00000        6.00000      -0.09       0.24
TINT              1.46096        0.50912        0.0            2.00000       0.04      -1.72
TPER              1.29723        0.46852        0.0            2.00000       0.74      -1.06
TVOC              1.14861        0.37007        0.0            2.00000       1.67       1.79
TA32              1.26700        0.44295        1.00000        2.00000       1.05      -0.90
TA33              1.34005        0.47432        1.00000        2.00000       0.67      -1.55
TB22              4.18640        0.64394        2.00000        5.00000      -0.59       1.31
TB23              1.80101        0.41827        1.00000        3.00000      -1.19       0.33
TD11              3.48866        0.89781        1.00000        5.00000      -0.57       0.22
S_JOBSAT          4.16010        1.02317        1.00000        6.00000      -0.51      -0.10
PROF             -0.40941        0.48136       -1.64179        0.97522      -0.04       0.01
HELP              1.65995        0.47432        1.00000        2.00000      -0.67      -1.55
TD58              2.66499        1.04982        1.00000        6.00000       0.80       1.09
TD61              8.31486        2.08024        1.00000       11.00000      -1.52       1.79
TD62              1.89421        1.23660        1.00000        9.00000       2.63       9.37
TD63              1.93199        0.73712        1.00000        5.00000       0.71       1.32
TREL              3.46222        0.55490        1.00000        4.00000      -0.86       0.56

VALUES FOR KURTOSIS GREATER THAN ZERO INDICATE DISTRIBUTIONS
WITH HEAVIER TAILS THAN THE NORMAL DISTRIBUTION.
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Univariate Summary Statistics:

Junior High School Climate Scales and Teacher Variables

VARIABLE	MEAN	STANDARD DEVIATION	SMALLEST VALUE	LARGEST VALUE	SKEWNESS	KURTOSIS
TEACHER	3.16268	0.31198	2.20500	3.79000	-0.50	-0.29
ORDERLY	3.06115	0.27146	2.20333	3.66667	-0.43	0.03
TFAVORIT	2.31379	0.35655	1.31000	3.40000	0.30	-0.22
PEEREST	2.97191	0.21133	2.36000	3.64000	-0.01	0.22
STUDDM	2.21773	0.30201	1.49000	3.40000	0.59	0.35
CLASSDIS	2.26917	0.43459	1.28000	3.37000	0.09	-0.54
SCOMPET	2.47801	0.24387	1.83000	3.23000	0.24	0.05
SCLIQUE	2.78180	0.26148	1.91000	3.48000	-0.44	0.63
SCOMPLI	3.25347	0.26535	2.21000	3.88000	-0.54	0.67
SAPATHY	2.06910	0.34520	1.22000	3.01000	-0.00	-0.36
CLASSPA	2.68780	0.42102	1.50000	4.00000	-0.28	-0.12
TASKDIF	2.12404	0.27294	1.50000	3.17000	0.27	0.03
TA1	36.31769	10.35739	22.00000	64.00000	0.68	-0.66
TA2	1.50903	0.50082	1.00000	2.00000	-0.04	-2.01
TA9	1.18773	0.39120	1.00000	2.00000	1.59	0.53
TA11	4.26715	1.29412	2.00000	6.00000	-0.13	-1.15
TA14	3.32130	0.55952	1.00000	5.00000	0.42	1.72
TA35	10.35379	7.45356	1.00000	36.00000	0.88	0.01
TCONTROL	4.56733	0.74263	2.50000	6.00000	-0.41	-0.19
BASICS	4.25069	0.99762	1.00000	6.00000	-0.49	0.01
STUDCON	5.19675	0.75787	2.50000	6.00000	-0.83	0.18
STUDPART	3.69513	0.90321	1.20000	5.80000	-0.11	-0.18
TINT	1.49819	0.50090	1.00000	2.00000	0.01	-2.01
TPER	1.26354	0.44135	1.00000	2.00000	1.07	-0.86
TVOC	1.12635	0.33285	1.00000	2.00000	2.24	3. 2
TA32	1.33935	0.47435	1.00000	2.00000	0.67	-1.55
TA33	1.36101	0.48116	1.00000	2.00000	0.58	-1.67
TB22	4.18412	0.64158	1.00000	5.00000	-0.59	1.59
TB23	1.82671	0.42427	1.00000	3.00000	-0.98	0.84
TD11	3.79783	0.89012	1.00000	5.00000	-0.49	-0.15
S_JOBSAT	4.40123	1.11962	1.17000	6.00000	-0.77	0.00
PROF	-0.52051	0.47710	-1.61165	0.75639	0.27	-0.29
HELP	1.73285	0.44327	1.00000	2.00000	-1.05	-0.91
TD58	2.49819	1.03077	1.00000	6.00000	0.80	0.85
TD61	7.88448	2.01111	2.00000	11.00000	-1.17	0.80
TD62	2.24910	1.26522	1.00000	11.00000	2.29	9.02
TD63	1.71480	0.72349	1.00000	5.00000	0.89	1.07
TREL	3.55596	0.52607	1.50000	4.00000	-1.12	0.86

VALUES FOR KURTCSIS GREATER THAN ZERO INDICATE DISTRIBUTICNS
WITH HEAVIER TAILS THAN THE NORMAL DISTRIBUTION.

APPENDIX D

Sample of Observation Instrument and Coding Summary

An Adaptation of the SRI
Observation System

|I|D|E|A|
INSTITUTE FOR DEVELOPMENT OF EDUCATIONAL ACTIVITIES, INC.

Elementary/Secondary OBSERVATION INSTRUMENT

School No.	Clsrm. No.
⓪⓪	⓪⓪⓪
①①	①①①
②②	②②②
③③	③③③
④④	④④④
⑤⑤	⑤⑤⑤
⑥⑥	⑥⑥⑥
⑦⑦	⑦⑦⑦
⑧⑧	⑧⑧⑧
⑨⑨	⑨⑨⑨

Grade Level	
From	To
⓪⓪	⓪⓪
①①	①①
②②	②②
③③	③③
④④	④④
⑤⑤	⑤⑤
⑥⑥	⑥⑥
⑦⑦	⑦⑦
⑧⑧	⑧⑧
⑨⑨	⑨⑨

No. Stdnts. Enrolled
⓪⓪
①①
②②
③③
④④
⑤⑤
⑥⑥
⑦⑦
⑧⑧
⑨⑨

SECONDARY ONLY	
Per. No.	Subject Area
①	① English
②	② Mathematics
③	③ Social Studies
④	④ Science
⑤	⑤ The Arts
⑥	⑥ Foreign Language
⑦	⑦ Vocational/Career Education
⑧	⑧ Physical Education
⑨	
⑩	

Scheduled Class Duration		
From:		
Hour	Minute	
⑦⑧⑨⑩⑪⑫ ①②③④⑤	⓪①② ③④⑤	⓪①②③④ ⑤⑥⑦⑧⑨
To:		
Hour	Minute	
⑦⑧⑨⑩⑪⑫ ①②③④⑤	⓪①② ③④⑤	⓪①②③④ ⑤⑥⑦⑧⑨

Today's Date		
Mo.	Day	Yr.
⓪⓪	⓪⓪	⓪⓪
①①	①①	①①
②②	②②	②②
③③	③③	③③
④④	④④	④④
⑤⑤	⑤⑤	⑤⑤
⑥⑥	⑥⑥	⑥⑥
⑦⑦	⑦⑦	⑦⑦
⑧⑧	⑧⑧	⑧⑧
⑨⑨	⑨⑨	⑨⑨

Data Collector No.
⓪⓪
①①
②②
③③
④④
⑤⑤
⑥⑥
⑦⑦
⑧⑧
⑨⑨

Obs. No.
①
②
③
④
⑤

Book No.
①
②
③
④
⑤

○ Reliability

⓪①②③④ Number of teachers that regularly work in the classroom

⓪①②③④ Number of aides that regularly work in the classroom

School ______________________

Teacher ______________________

Room # ________ Period # ______________

Class Title ______________________

123 Data Collector ______________________

PHYSICAL ENVIRONMENT INVENTORY

A. Space

1. ○ Open structure
   ○ Open structure with furniture used to partition
   ○ Multiple rooms with movable walls used as open structure
   ○ Multiple rooms with movable walls used as single room
   ○ Single room

Classroom equivalence

○ 2 classes
○ 3-4 classes
○ 5-6 classes
○ 7-8 classes
○ 9 or more classes

2. ○ Adjacent patio or outside work space
   ○ Adjacent room for work space, storage, teacher's office
   ○ Room opens into inside common area
   ○ Room without adjacent usable space

B. Furniture/Furnishings

1. ○ Desks or tables with seats attached
   ○ Desks or tables with movable chairs
   ○ Combination

2. ○ Fixed desks/tables
   ○ Movable desks/tables
   ○ Combination

3 ○ Desks/tables in rows
   ○ Desks/tables in arrangement other than rows
   ○ Combination

4. ○ 3 or more learning centers
   ○ 1 or 2 learning centers
   ○ No learning centers

5. ○ Stuffed furniture, sofa, chairs

6. ○ Rugs, carpet

7. Degree of alteration to physical environment
   ○ Little or no alteration
   ○ Moderately altered
   ○ Highly altered by display of objects or materials

8. ○ Art work primarily commercially or teacher made
   ○ Art work primarily student made

9. ○ One or more displays having to do with countries other than the U.S.

C. Equipment and materials

○ Books, magazines
○ Games, puzzles
○ Maps, globes
○ Live animals
○ Live plants
○ Teaching aids
○ Tapes
○ AV equipment
○ Chalkboard
○ Art materials
○ Teaching machines
○ Overhead projectors

CLASSROOM SNAPSHOT

ACTIVITIES		One Student	Small Groups	Medium Groups	Large Groups	Total Class
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
1. Preparation for Assignments or Instructions/Cleanup	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
○ Story Time ○ Materials and Equipment	A	①②③④⑤	①②③④	①②③	①②	①
2. Explain, Lecture, or Read Aloud	S	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
3. Demonstration	S	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
4. Discussion	C	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
5. Simulation, Role Playing	C	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
6. Reading	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
7. Work on Written Assignments	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
8. Practice or Perform (psycho-motor, physical)	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
9. Practice or Perform (verbal)	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	T	①②③④⑤	①②③④	①②③	①②	①
	A	①②③④⑤	①②③④	①②③	①②	①
	C	①②③④⑤	①②③④	①②③	①②	①
10. Taking Test or Quiz	I	①②③④⑤	①②③④	①②③	①②	①
○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.	C	①②③④⑤	①②③④	①②③	①②	①
11. Audio Visual Equipment ○ Television, Radio ○ Tapes, Records ○ Tchg Machines ○ Films, Filmstrips	I	①②③④⑤	①②③④	①②③	①②	①

12. Student Non-Task Behavior or Teacher Social Interaction with Student(s) — No Assignment

T	①②③④⑤	①②③④	①②③	①②	①
A	①②③④⑤	①②③④	①②③	①②	①
C	①②③④⑤	①②③④	①②③	①②	①
I	①②③④⑤	①②③④	①②③	①②	①

○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E. ○ No Subject

T	①②③④⑤	①②③④	①②③	①②	①
A	①②③④⑤	①②③④	①②③	①②	①

13. Adult Disciplining Students

○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.

①②③④ Teacher ①②③④ Aides

14. Adult Monitoring and/or Observing Students

○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E. ○ No Subject

①②③④ Teacher ①②③④ Aides

15. Adult Custodial, Routines

○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.

①②③④ Teacher ①②③④ Aides

16. Adult Not Involved or Out of Classroom

○ Eng ○ Math ○ Sci ○ S.S. ○ Arts ○ F.L. ○ P.E.

C	①②③④⑤	①②③④	①②③	①②	①
I	①②③④⑤	①②③④	①②③	①②	①

17. Student Non-Task Behavior During Subject

○ 0-24% ○ 25-49% ○ 50-74% ○ 75-100%

18. Percentage of Class at High Interest Level

For This Snapshot Only

Number of Teachers in Classroom ⓪①②③④

Number of Aides in Classroom ⓪①②③④

Number of Visitors in Classroom ⓪①②③④

Number of Students	
⓪	⓪
①	①
②	②
③	③
④	④
⑤	⑤
⑥	⑥
⑦	⑦
⑧	⑧
⑨	⑨

FIVE MINUTE INTERACTION

Time Started		
Hour	Minute	
7 8 9 10 11 12	0 1 2	0 1 2 3 4
1 2 3 4 5	3 4 5	5 6 7 8 9

Content Start

① Eng.
② Math
③ Sci
④ S.S.
⑤ Arts
⑥ F.L
⑦ P.E.
⑧ Other

1

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

2

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

3

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

4

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

5

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

6

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

7

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

8

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

9

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

10

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

11

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

12

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

13

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

14

	Who			To Whom			What				Cx.		How				
R	T	A	O	T	A	O	1	2	3	4	I	R	W	T	X	M	H
S	S	D	2	S	D	2	5	6	7	8	B	S	Z				
C	Sm	M	L	Sm	M	L	9	10	11	12			G	D	∿	+	−

Daily Summary

1. Space

- ○ Crowded
- ○ Adequate
- ○ Spacious

2. Adequacy of materials

- ○ Adequate
- ○ Inadequate

3. Student use of materials and equipment

- ○ Unrestricted
- ○ Partially restricted
- ○ Restricted
- ○ No opportunity to observe

4. Locus of Decision Making

	Predominantly Teacher	Predominantly Students	Not Obs.
Seats	○	○	○
Groups	○	○	○
Content	○	○	○
Materials	○	○	○
Space	○	○	○
Time	○	○	○
Learning Activities	○	○	○

LIST OF CODES

Who/To Whom

T - Teacher
A - Aide
O - Other Adult
S - Student
D - Different Student
2 - Two Students
Sm - Small Group
M - Medium Group
L - Large Group

How

NV - Non-verbal
T - Touch
X - Movement
M - Material, Object
H - Humor
Z - Personal Experience
G - Guide
D - Demean, Threaten
Pu - Punish
+ - Positive
- - Negative

What

1 - Direct Question
2 - Open-ended Question
3 - Response
4 - Instruction, Explanation
5 - Request, Command
5G - Open-ended Command
6 - Comment, General Action
7 - Acknowledge, Praise
8 - Support, Encourage
9 - Corrective Feedback

10 - No Response
11 - Reject
12 - Observe, Monitor

Context

i - Instructional
R - Routine
B - Behavior
S - Social

APPENDIX E

Univariate Summary Statistics and Variable Codes For Observation/Climate Variables

Variable Codes for Observation/Climate Variables

Variable Code	Variable
TEACHER	Teacher Concern, Teacher Punitiveness, Teacher Authoritarianism, and Teacher Enthusiasm
ORDERLY	Teacher Clarity, Knowledge of Results and Organization
IFAVORIT	Teacher Favoritism
PEEREST	Peer Esteem
STUDDM	Student Decision-Making
CLASSDIS	Classroom Dissonance
SCOMPET	Student Competitiveness
SCLIQUE	Student Cliqueness
SCOMPLI	Student Compliance
SAPATHY	Student Apathy
CLASSPA	Classroom Physical Appearance
TASKDIF	Task Difficulty
PE7	The degree of alteration to the Physical Environment (Little, Moderately or Highly altered).
DS1	Space Rating (Crowded, Adequate, Spacious).
DS3	Student use of materials and equipment (Restricted, Partially Restricted, Unrestricted).
DS12	Locus of decision-making (Predominantly Teacher, Predominantly Student).
SNAP15	Rank of class at high interest level (1=0% to 24%, 2=25% to 49%, 3=50% to 74%, 4=75% to 100%).
SNAP17	Variety of instructional activities by observation
SNAP19	Variety of grouping by observation
D1	Teacher direction of activities.

D4	Cooperative direction of activities.
D5	Independent direction of activities.
A15	Adult involved in custodial or routine activities.
WA2	Explaining, lecturing or reading aloud.
WA4	Discussion.
WA7	Work on written assignments.
WA10	Taking test or quiz.
WA12	Student non-task behavior or teacher social interaction--no assignment.
WA17	Student non-task behavior during assignment.
INS8	Direct question--adult to one student.
INS9	Direct question--adult to two or more students.
INS13	Instruction/explanation--adult to one student.
INS17	Instruction/explanation--adult to a small or medium group.
INS18	Instruction/explanation--adult to a large group.
INS22	Imperative command--adult to one student.
INS24	Comments/general action--adult to one student.
INS32	Acknowledgment--adult to one student.
NINS34	Simple Correction--adult to one student.
INS58	Correction with guidance--adult to one or more.
INS59	Monitor Observe--to two or more students.
NINS44	Monitor Observe with movement--adult to one or more students.
INS104	Student response.
INS107	Student contributing
INS109	Student questioning
INS110	Student response--non-verbal.

BEH32	Simple correction--adult to one student (behavior)
BEH33	Simple correction--adult to two or more students (behavior)
BEH65	Adult working alone (behavior)
BEH66	Adult interacting with other adult (behavior)
BEH104	Student response (behavior)

Univariate Summary Statistics: High School Climate Scales and Observational Variables

```
                                STANDARD       SMALLEST        LARGEST
VARIABLE             MEAN      DEVIATION         VALUE           VALUE    SKEWNESS   KURTOSIS

TAFFECT           3.70254        0.30239       2.30500         3.92250       -0.54      -0.01
ORDERLY           3.08074        0.31559       1.96000         3.84333       -0.39      -0.01
TFAVORIT          2.22920        0.38664       1.00000         3.47000        0.23      -0.09
PEEREST           3.02843        0.23857       2.32000         3.67000       -0.10      -0.08
STUDDM            2.31802        0.37323       1.58000         3.65000        0.59       0.20
CLASSDIS          1.88942        0.43497       1.00000         3.40000        0.52      -0.17
SCOMPET           2.32305        0.31484       1.31000         3.59000        0.25       0.93
SCLIQUE           2.62555        0.35088       1.42000         3.46000       -0.34      -0.10
SCOMPLI           3.24103        0.27457       2.25000         4.00000       -0.34       0.01
SAPATHY           1.93093        0.36588       1.02000         2.97000        0.36      -0.14
CLASSPA           2.65328        0.47078       1.35000         3.88000       -0.05      -0.51
TASKDIF           2.01439        0.31736       1.14000         2.89000        0.15      -0.78
PE7               1.40583        0.61147       1.00000         3.00000        1.23       0.42
DS1               2.15734        0.44946       0.0             3.00000        0.12       1.31
DS3               1.20028        1.16183       0.0             3.00000        0.24      -1.50
DS12              1.18297        0.29904       0.0             2.00000       -0.33       4.81
SNAP15            3.34897        0.63953       1.00000         4.00000       -1.05       0.63
SNAP17            1.72118        0.59667       0.0             3.66600        0.59       0.47
SNAP19            1.88655        0.84569       0.66600         5.00000        0.66      -0.28
A15               2.08894        1.87889       0.0             8.53094        0.27      -1.02
D1               59.63764       21.71245      14.33500       100.04999        0.13      -0.77
D4                2.10432        2.60373       0.0             9.01665        0.81      -0.69
D5               26.35298       17.23985       0.0            76.36499        0.20      -0.60
WA2              25.85807       23.01068       0.0           100.04999        0.77      -0.19
WA4               1.14538        1.98141       0.0             8.76036        1.61       1.57
WA7               2.78480        2.77731       0.0             9.58014        0.40      -1.16
WA10              1.26255        2.02212       0.0             7.51798        1.18      -0.20
WA12              1.87976        1.97893       0.0             8.13437        0.61      -0.68
WA17              0.97157        1.10433       0.0             4.71932        0.79      -0.35
INS8              1.51222        0.67012       0.0             4.41588        0.36       0.36
INS9              1.34742        0.77736       0.0             3.84318        0.33      -0.31
INS13             2.37346        1.42447       0.0             6.24980        0.53      -0.39
INS17             3.29734        2.27400       0.0             8.96326       -0.02      -1.04
INS18             1.01895        0.59233       0.0             3.43074        0.56       0.60
INS22             0.89540        0.66571       0.0             4.50999        0.87       1.63
INS24             0.98691        0.59282       0.0             3.06268        0.34      -0.27
INS32             0.58723        0.47024       0.0             2.24054        0.72       0.61
NINS34            0.50528        0.61324       0.0             3.18591        1.27       1.23
INS58             2.19000        1.60114       0.0             8.11911        0.85       0.52
INS59             0.94321        1.03190       0.0             5.16140        1.13       0.76
INS104            2.61768        0.81701       0.66332         5.09411        0.35      -0.03
INS107            1.60779        0.74362       0.0             4.93457        0.72       1.21
INS109            1.74341        0.63733       0.0             3.49428       -0.06      -0.31
INS110            0.93901        0.65361       0.0             4.86415        1.46       4.96
BEH32             0.44438        0.41260       0.0             1.84391        0.57      -0.29
BEH33             0.39234        0.40784       0.0             2.20907        0.84       0.38
BEH65             3.03360        1.61752       0.0             7.67854        0.27      -0.35
BEH66             0.68284        0.72900       0.0             3.72290        1.22       1.59
BEH104            0.36034        0.42730       0.0             1.76635        0.97       0.03
NINS44            1.19668        1.66134       0.0             9.16624        1.65       2.58

VALUES FOR KURTOSIS GREATER THAN ZERO INDICATE DISTRIBUTIONS
WITH HEAVIER TAILS THAN THE NORMAL DISTRIBUTION.
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Univariate Summary Statistics: Junior High School
Climate Scales and Observation Variables

```
                             STANDARD     SMALLEST      LARGEST
VARIABLE          MEAN      DEVIATION        VALUE        VALUE   SKEWNESS  KURTOSIS

TAFFECT        3.13979        0.30810      2.20500      3.79000      -0.47     -0.25
ORDERLY        3.04504        0.26984      2.14333      3.66667      -0.48      0.14
TFAVCRIT       2.33212        0.34442      1.31000      3.40000       0.27     -0.17
PEEREST        2.97040        0.20707      2.36000      3.64000       0.04      0.14
STUDDM         2.20765        0.29946      1.39000      3.40000       0.38      0.35
CLASSDIS       2.28340        0.43547      1.28000      3.37000       0.04     -0.56
SCOMPET        2.48116        0.24174      1.83000      3.23000       0.26     -0.04
SCLIQUE        2.78700        0.26501      1.76000      3.48000      -0.54      0.78
SCOMPLI        3.24246        0.26405      2.21000      3.88000      -0.47      0.56
SAPATHY        2.07980        0.33430      1.22000      3.01000      -0.03     -0.32
CLASSPA        2.66442        0.41694      1.50000      4.00000      -0.23     -0.17
TASKDIF        2.14303        0.26637      1.47000      3.17000       0.10     -0.05
PE7            1.50708        0.65330      1.00000      3.00000       0.92     -0.29
DS1            2.13187        0.41170      1.00000      3.00000       0.60      1.11
DS3            1.39727        1.10887      0.0          3.00000      -0.13     -1.46
DS12           1.08684        0.20323      0.0          1.91600      -1.45     11.41
SNAP15         3.56209        0.51961      1.18100      4.00000      -1.58      2.80
SNAP17         1.79029        0.54571      0.0          3.33300       0.22     -0.01
SNAP19         1.82387        0.80540      0.66600      4.00000       0.63     -0.55
A15            2.08202        1.95414      0.0          7.35554       0.32     -1.09
D1            57.24680       20.63756     10.81900    100.04995      -0.07     -0.72
D4             2.11495        2.64058      0.0          8.74145       0.85     -0.66
D5            26.24545       14.51033      0.0         66.71599       0.17     -0.55
WA2           22.24904       19.96097      0.0         87.28400       0.37      0.15
WA4            1.02865        1.92214      0.0          9.60729       1.86      2.91
WA7            3.49531        2.96512      0.0          9.79694       0.10     -1.33
WA10           1.32611        2.00128      0.0          7.29664       1.05     -0.49
WA12           1.07654        1.54678      0.0          7.33573       1.24      0.63
WA17           1.26893        1.27026      0.0          5.90864       0.80      0.01
INS8           1.66918        0.74308      0.0          4.42719       0.66      0.77
INS9           1.25194        0.67517      0.0          3.17962       0.20     -0.45
INS13          2.35379        1.37424      0.0          6.82495       0.48     -0.19
INS17          3.48530        1.81969      0.0          7.59276      -0.38     -0.65
INS18          1.28289        0.62844      0.0          3.83406       0.40      0.47
INS22          0.84035        0.51320      0.0          3.77359       0.75      2.48
INS24          1.07924        0.67135      0.0          3.08058       0.39     -0.23
INS32          0.59232        0.55313      0.0          2.51794       0.89      0.45
NINS34         0.51750        0.57573      0.0          3.75366       1.41      2.85
INS58          2.60640        1.65982      0.0          8.35893       0.58     -0.21
INS59          1.42616        1.29769      0.0          7.89303       1.32      2.49
INS104         2.77621        0.89400      0.67082      5.60535       0.15     -0.39
INS107         1.15169        0.67769      0.0          4.08167       1.04      2.15
INS109         1.74854        0.72200      0.0          4.17013       0.25     -0.17
INS110         1.07349        0.72272      0.0          4.34166       1.06      1.73
BEH32          0.72440        0.57166      0.0          2.86007       0.61      0.15
BEH33          0.61647        0.52764      0.0          3.02820       0.88      1.30
BEH65          2.77412        1.65458      0.0          8.16456       0.33     -0.43
BEH66          0.60883        0.72037      0.0          3.86652       1.30      1.79
BEH104         0.52293        0.46500      0.0          1.79722       0.51     -0.57
NINS44         0.82266        1.24223      0.0          6.31902       1.74      2.58

VALUES FOR KURTOSIS GREATER THAN ZERO INDICATE DISTRIBUTIONS
WITH HEAVIER TAILS THAN THE NORMAL DISTRIBUTION.
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